

Syllabus

EDS 242: ETHICS AND BIAS IN ENVIRONMENTAL DATA SCIENCE

Fall 2024

Course: EDS 242, 2.0 credits
Meetings: W 12:30-1:45pm
Location: Bren Hall 1424
Instructor: Dr. Anastasia Quintana

Pronouns: she/her

Office hours (this is the best way to reach me):

Thurs 3-4pm, Bren 4322

Email: anastasiaquintana@ucsb.edu

*** If I do not respond to your email within 48 hours, please re-send, it is not a bother to be reminded of your email!*

Course description

This course is a discussion-based class that will explore ethical considerations and bias in collecting, using, and reporting environmental data. This class is tailored for the MEDS program to complement fast-paced skill-building classes on conducting environmental data analysis. The goal of this class is for students to have a space to reflect, debate, apply readings, bring your own experiences to the table, and think critically on data collection, data analysis, data bias, and data ethics. The class is organized into three blocks:

1. **Fundamentals.** The first block will be an overview of common and pervasive types of data bias and key considerations for data ethics. This block will be the most lecture-heavy block of the quarter (though it will still be largely discussion).
2. **Guest lectures.** The second block will feature three guest lectures. The first is on data bias and policy; the second is on data bias and non-governmental organizations (NGOs); and the third is on data bias and artificial intelligence (AI).
3. **Critiques and solutions.** The third block is a deep dive on existential critiques of data bias (the indigenous data sovereignty movement and “measurementality”), as well as practical solutions for you all to take away from this class.

The central argument of the class is: *data is never raw but always embedded in the politics of its production and interpretation.*

All readings can be found on Canvas and will be posted at least 1 week in advance in modules.

Course objectives

By the end of this class, you can expect to be able to:

1. Write a positionality statement for yourself
2. Anticipate types of data bias likely to affect data you work with
3. Design strategies to mitigate bias in data collection and data analysis
4. Understand implications of and be able to critically apply principles of indigenous data sovereignty and data justice

Class overview

Week	Block	Dates	Topic	Description
1	Block 1: Fundamentals	Oct 2	Introduction	Overview, what is data and data bias, why should you care? Data collection, databases, datasets
2		Oct 9	Shallow dive: Overview of data bias	Information blast about common types and levels of data bias
3		Oct 16	Deep dive: Some pervasive types of data bias	Gender, race, confirmation bias, P-inflation, and more
4	Block 2: Guest lectures	Oct 23	Data ethics & policy from a Californian case	Guest lecturer: Cori Lopazanski, Bren School
5		Oct 30	Data bias & NGOs who work with big, small, and complicated data	Guest lecturers: Ben Siegelman & Claudia Quintanilla, Rare
6		Nov 6	Mid-term: Class debate	
7		Nov 13	Data bias & AI / machine learning with a data science professional	Guest lecturer: Elizabeth Davison, the Aerospace Corporation AI Fairness 360 toolkit
8	Block 3: Critiques & solutions	Nov 20	Deep critiques: Data justice, measurementality, indigenous data sovereignty	Discuss blog posts and podcasts assignment
9		Nov 27	Class canceled (Thanksgiving Weds)	Work on your final projects: blog posts and podcasts
10		Dec 4	Solutions, toolkits, what to take away from this class	Case study: Data justice and conservation Big takeaways Class party
		Dec 13 8:00pm	FINALS WEEK	No class, final project due 8pm

Assignments

Type	%	Assignments	Grading
Discussion questions	30%	Before each class, submit a discussion question on Canvas based on the reading (must be submitted before 12:30pm each Weds except the first class on 10/2)	Credit/no credit for each class
Discussion participation	20%	Your active participation in class discussion and class activities	0-100
Midterm debate	20%	Your active preparation and participation in the midterm debate; 20% of your midterm grade will come from peer grading	0-100
Final project (blog post or podcast)	30%	For your final project, you may choose to create a blog post or podcast. Instructions will be posted by mid-November. Final projects are due by 8:00pm on December 13.	0-100

Discussion Questions (30% total):

Each week you are required to write one critical discussion question in response to one of the reading assignments (i.e. a response to one of the assigned articles), analyzing key ideas, and posing new questions. You may also reference other literature in the course or relevant outside reading. The discussion questions need to be submitted via the appropriate link on Canvas no later than 12:30 pm each Wednesday.

*Note, there are no readings and no discussion question due by the first day of class (Oct 2).

If you have a planned absence, please post a discussion question nonetheless. If you are very sick or have an emergency or are otherwise unable to submit a discussion question, please reach out to me as soon as you are well and able, and you will not miss points.

Participation (20% total):

We have nine precious classes together. Please come to class when you can. The success of this course depends on the quality of your preparation and participation. That being said, it is normal to miss class due to illness, appointments, and other conflicts. See attendance policy below. If you keep up with the readings and participate according to your preferred style in class, you will receive full participation points, even if you miss class occasionally.

Midterm (20%) and final (30%):

The midterm debate and final project will have separate instructions posted on Canvas.

Readings:

There are no required books or reader. All required readings will be posted on Canvas at least one week in advance.

Grading:

Your final grade will be based on your performance of the course requirements above. The midterm debate and final project (blog or podcast) will receive a grade according to the following criteria:

- A (90-100): Outstanding work. Debate preparation/performance, blog, or podcast is accurate, clear, rigorous, and shows evidence of effort as well as careful attention to detail. Verbal contributions are thoughtful and consistent.
- B (80-89): Solid work. Debate preparation/performance, blog, or podcast is accurate and clear. Verbal contributions are frequent, articulate, and thoughtful.
- C (70-79): Mediocre work. Debate preparation/performance, blog, or podcast have some problems. Verbal contributions are occasional or occasionally thoughtless.
- D (60-69): Substandard work. Debate preparation/performance, blog, or podcast has many mistakes, is hard to follow, and does not show evidence of careful attention to the assignment. Verbal contributions are infrequent and/or thoughtless.
- F (0-59): Failure. Debate preparation/performance, blog, or podcast is incomplete, unintelligible, rife with mistakes, or not turned in at all. Verbal contributions are not made.

The fine print

Access and Accommodations: Please submit requests for accommodations often and early. It is never too late to apply for DSP accommodations! If you have any kind of disability, whether apparent or non-apparent, learning, emotional, physical, or cognitive you may be eligible to use formal accessibility services on campus. To arrange class-related accommodations, please contact DSP at <https://dsp.sa.ucsb.edu/accommodations/how-apply> . DSP will initiate communication about accommodations with faculty. By making a plan through DSP, appropriate accommodations can be implemented without disclosing your specific condition or diagnosis to course instructors.

Pronouns: I take pronouns seriously. Please share your preferred pronouns with me if you want me to use them, including if they change through the quarter. If you do not share your pronouns with me, I will default to they/them when discussing you.

Attendance and missing class: This is your class, courtesy of your tuition fees. We have nine classes together – that’s it. Please come to class when you can. That being said, it is normal to miss class due to illness, appointments, and other conflicts. You don’t need to ask for permission or forgiveness to miss class. If you are sick, don’t come to class. Don’t worry. Get better, then come talk to me. If you are able, you should still read the required reading, look at the slides I post online, and talk to another student to find out what you missed. If you are able, you should also still post a discussion question before class starts.

Policy on late assignments: Assignment due dates are clearly marked. However, you get a bonus 1-day grace period for every assignment. You do not need to ask for this. For this class, the only assignment is the final paper.

COVID-19 policy: This is UCSB’s COVID-19 policy: Do not come to campus if you are ill and isolate if possible. Positive results should be self-reported via the Student Health Patient Portal using the form under "Messages" then "New Message." Campus employees (including student employees) must self-report any COVID-19 infections/positive test results so that the campus can comply with CalOSHA and California State regulations that require notification of exposed close contacts, and notification to bargaining units if applicable. UC Santa Barbara will continue to conduct case investigations of COVID-19 employee cases for this purpose, and to track trends on campus. Additionally, self-reporting will facilitate the tracking of any outbreaks. Sign

up at CA Notify to receive exposure notifications. If you get COVID-19 and are concerned about missing too many classes, talk to me. If there is a significant outbreak such that a large number of students cannot come to class, but feel well enough to do class online, we will migrate our class to Zoom.

Mental health: We are in the midst of a mental health crisis nationwide and at UCSB. My goal is to help you learn the material. I design my assignments and tests in service of that goal. If assignments or tests are getting in the way of your learning by causing crippling anxiety or any other paralyzing feeling, please come talk to me. Tests often create perverse incentives that crowd out intrinsic incentives to learn. Let's avoid that. Talk to me if you are anxious or feeling stuck in an assignment.

Unusual circumstances: In these 10 weeks of our class, your life will go on and things will happen, good and bad. If some external factor affects your ability to complete assignments on time or attend class, please talk to me. I am happy to make reasonable exceptions. I will exercise my best judgement and expect you to follow your own high moral standards about doing the right thing. It's your life and you live with yourself and your decisions. I err on the side of believing students.

Extra credit: Wow, thank you for actually reading the syllabus. There is only one opportunity for extra credit and that is by going to [this Google Form \(https://forms.gle/3rbAUVWgijV1CECg7\)](https://forms.gle/3rbAUVWgijV1CECg7) before October 5th, 2024, at 10:00pm, and filling out your name. If you do so, you will get 3 extra credit points on your final project (out of 100 total, yes you can go over 100).

ChatGPT: ChatGPT is a powerful tool. You are welcome to use ChatGPT as much as it serves you. However, I encourage you to stay skeptical – don't let artificial intelligence replace intelligence. I will be grading the content of your material and hold you to a high standard to produce meaningful content. Watch out if using ChatGPT because it often produces watered-down, bland content.

No tolerance of discrimination, violence, or harassment based on sex, gender, race, national origin, etc.: Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. In this class I will not tolerate discrimination, violence, or harassment based on sex, gender, race, national origin, etc. Please contribute to the class collective by respecting your classmates' pronouns, difference of experience, and difference of opinion.