

**DS 435-001**

# **DATA ETHICS**

Fall 2022  
M/W 2:30-3:45PM  
Westgate W219

## **PROFESSOR**

Dr. Daniel Susser

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<https://calendly.com/susser/25min>

## **TEACHING ASSISTANT**

Touhidul Islam

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Office: Westgate E394

Office hours: Wednesdays 1-2PM or by appointment (in-person or over Zoom)

## **DESCRIPTION**

In this course, we will explore social and ethical dimensions of data science. Datafication can be a powerful force for good, but it can also do enormous harm—to individuals and society. Drawing primarily from case studies, we will investigate when, why, and how data is collected, analyzed, and used, and we will ask what the ethical stakes are of these data-driven systems. In addition to diagnosing ethical problems—e.g., invasions of privacy, algorithmic bias, and lack of transparency and accountability—students will be asked to think creatively and constructively about how the tools of information science can be used to realize our shared ethical and social commitments.

## **GOALS & OBJECTIVES**

The central aim of this course is twofold: (1) to help you develop an awareness of and sensitivity to ethical issues in the design and implementation of information technologies, and (2) to provide you with a set of conceptual tools that will enable you to evaluate and articulate those issues with precision. Upon successful completion of this course, you will be able to:

1. Identify and describe ethical issues in the design and implementation of information technologies;
2. Critically evaluate all stages of the data lifecycle, from data collection and storage to data analysis and use;
3. Propose constructive solutions to data ethics problems;
4. Formulate arguments and counter-arguments in support of your views.

## **TEXTS**

All texts are accessible for free online—either at the URLs listed in the course schedule below or through the course Canvas site. If there is no link to the text in the course schedule, you can find a

PDF in the “Readings” folder of the “Files” section on Canvas. You are not required to purchase any books for this course.

## **ASSESSMENTS**

### **Reading Questions**

This class is not just about reading texts and regurgitating ideas; it’s about developing a critical orientation toward and ethical sensitivity to the design of data-driven technology. To do that, you have to think, write, and talk about these issues in order to understand and internalize them. Accompanying every day’s readings are three to five reading questions, designed both to help you identify the main concepts and arguments in each reading, and to contextualize them within the overarching themes of the course. You will submit written responses through Canvas. Your responses should generally be about one paragraph long per question, and question sets are **due each Monday and Wednesday at 2:30PM—i.e., at the beginning of class. I will accept late RQs up to 24 hours after the original deadline for half credit.**

### **Discussion Lead**

Each student will lead one class discussion during the semester. We will schedule these during the first week of class, and I will provide you with details and structure for how to carry out this responsibility. **If you need to reschedule your day to act as discussion lead, you are responsible for finding someone to swap with and letting me know about the change in advance.** If you fail to do so, you will receive a zero for that portion of your final grade.

### **Notes/Recap Lead**

Each student is responsible for taking notes for the class during one class session and giving a brief (2-3 minute) recap during the following class session. We will schedule these during the first week of class, and I will provide you with details and structure for how to carry out this responsibility. **If you need to reschedule your days to take notes and recap, you are responsible for finding someone to swap with and letting me know about the change in advance.** If you fail to do so, you will receive a zero for that portion of your final grade.

### **Exams**

There are two exams in this course—one midterm and one final exam. The midterm exam will take place in class on October 12<sup>th</sup>. **If you cannot attend class that day, you must notify me in advance. Otherwise, you will receive a zero.** The final exam will be take-home, due during finals week. I will deduct 10% each day for late submissions.

## **GRADING**

Grades for this course are calculated on a points system. As described below, all the points for all of your assignments total 164 points. You get four freebies—I calculate grades out of 160 points. To earn an A, you must receive at least 149 points. The rest of the grading scale is listed below.

Discussion Lead	15 points
Notes/Recap Lead	10 points
Reading Questions	67 points total

Exams \_\_\_\_\_ 70 points total (2 x 35pts)  
162 points total

Grading scale: A (149-162), A- (144-148pts), B+ (139-143pts), B (133-138pts), B- (128-132pts), C+ (123-127pts), C (117-122pts), C- (112-116pts), D+ (107-111pts), D (101-106pts), D- (96-100pts), F (<96pts)

## **EXTRA CREDIT**

There are no extra credit opportunities in this course.

## **ATTENDANCE**

This is a discussion-based course, meaning much of the learning happens through in-class conversation. Attendance and participation are therefore mandatory. Each student is allowed two absences without penalty—beyond that I will deduct 3 points from your final grade for each missed class. If you cannot attend class due to illness (including COVID), a death in the family, etc., you must email me (as a PDF attachment) a *signed letter* justifying your absence before the start of class.

## **EMAIL POLICY**

I encourage you to email me with any questions or concerns you have about the course or your work in it. However, I am not on call 24 hours/day: I will respond to emails Monday-Friday, 9am-5pm. If you email me at night or on the weekend, do not expect an immediate response. Furthermore, I will not respond to emails if (1) they do not contain a salutation (e.g., “Hi Dr. Susser,...” or “Dear Prof. Susser,...”) or (2) the answer to your question is contained in this syllabus or on Canvas. You’re an adult! I expect you to send professional correspondence that doesn’t look like a text message, and I expect you to have the wherewithal to look for answers first before asking me.

## **ACADEMIC INTEGRITY**

College is stressful. Sometimes we take on too much or otherwise get in over our heads. If you feel overwhelmed or think you might not be able to meet my expectations in this course, please come discuss it with me—I’m 100% sure we can sort it out. If, however, you choose to go the other route, and I discover that you have cheated, plagiarized, or engaged in any other form of academic dishonesty, I will report it to the university immediately and recommend that you fail the course. If you aren’t sure whether something counts as plagiarism, please ask!

## **ACCOMMODATING DISABILITIES**

I am committed to all students succeeding in this course, and I have tried to construct it in a way that is universally accessible by default. But I’m sure it falls short of that ideal. If you have any kind of disability, visible or invisible, learning, emotional, physical, or cognitive, and you need accommodations or alternatives to lectures or other assignments, please contact me—preferably during the first week of class. (Though if something comes up later that you didn’t anticipate, you can of course get in touch with me then.) For a variety of reasons it is also wise to formally document your disability with Student Disability Resources in the Office of the Vice Provost for Educational Equity. More information at <http://equity.psu.edu/student-disability-resources/>

## **COUNSELING AND PSYCHOLOGICAL SERVICES**

It is very common for students to face personal challenges or have psychological needs that interfere with their academic progress or general wellbeing. Please do not try to overcome those challenges on your own! The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation. You can reach University Park CAPS by phone at (814) 863-0395 or online at <http://studentaffairs.psu.edu/counseling/>

Penn State also has a 24/7 Crisis Phone Line, which you can reach at (877) 229-6400, and a Crisis Text Line, which you can reach by texting LIONS to 741741.

## **REPORTING BIAS**

I take bias and discrimination very seriously, as does the university. If you believe you have experienced or observed a hate crime, an act of intolerance, discrimination, or harassment, I encourage you to come speak with me immediately and/or to report it to the university. More information at <http://equity.psu.edu/reportbias/>

## **COURSE SCHEDULE**

### **WEEK 1: IS BETTER TECH GOOD?**

#### **M 8/22     *Introductions***

No reading

#### **W 8/24     *Does Improved Technology Mean Progress?***

Skim: Leo Marx, "Does Improved Technology Mean Progress?" (esp. p71)  
RQs due in class

### **WEEKS 2-4: CAN TECHNOLOGIES EXPRESS VALUES?**

#### **M 8/29     *Technologies as Forms of Life***

Read: Langdon Winner, "Technologies as Forms of Life" (esp. pp. 5-10)  
Listen: 99% Invisible, "[Matters of Time](#)" ([Apple Podcasts link](#))  
Skim: L.M. Sacasas, "[The Questions Concerning Technology](#)"

RQs due in class

**W 8/31     *Settling the Community's Affairs***

Read: Langdon Winner, "Do Artifacts Have Politics?" (p. 668-673)

Read: Kim Tallbear, "[Can DNA Determine Who is American Indian?](#)"

RQs due in class

**M 9/5     *Labor Day – No Class***

**W 9/7     *Algorithms as Opinions: Models, Choices, and Assumptions***

Watch: Cathy O'Neil, "[The Truth About Algorithms](#)"

Read: Cathy O'Neil, *Weapons of Math Destruction*, Chapter 1, "Bomb Parts"

RQs due in class

**M 9/12     *Algorithms as Opinions: Proxies and Optimization***

Read: Cathy O'Neil, *Weapons of Math Destruction*, Chapter 3, "Arms Race"

RQs due in class

**W 9/14     *No Class***

**WEEKS 5-7: IS AUTOMATED DECISION-MAKING FAIR?**

**M 9/19     *Judged By Machines***

Read: U.S. News, "[How AI-Powered Tech Landed Man in Jail With Scant Evidence](#)"

Read: Vox, "[How Artificial Intelligence Can Help Us Make Judges Less Biased](#)"

RQs due in class

**W 9/21     *How Machines Learn***

Watch: Google, "[The 7 Steps of Machine Learning](#)"

Read: Kate Crawford and Trevor Paglen, "[Excavating AI: The Politics of Images in Machine Learning Training Sets](#)"

RQs due in class

**M 9/26     *Data Trouble***

Read: Solon Barocas, Moritz Hardt, and Arvind Narayanan, "[Introduction to Fairness and Machine Learning: Limitations and Opportunities](#)"

Read: Miranda Bogen, "[All the Ways Hiring Algorithms Can Introduce Bias](#)"

RQs due in class

**W 9/28     *Where Bias Happens***

Watch: Google, "[Machine Learning and Human Bias](#)"

Read: Harini Suresh and John Guttag, [“A Framework for Understanding Unintended Consequences of Machine Learning”](#) (Section 3)

RQs due in class

**M 10/3      *Fifty Shades of Fairness***

Watch: Arvind Narayanan, [“Tutorial: 21 Fairness Definitions and Their Politics”](#)

RQs due in class

**W 10/5      *The Limits of Fairness***

Read: Julia Powles and Helen Nissenbaum, [“The Seductive Diversion of ‘Solving’ Bias in Artificial Intelligence”](#)

Watch: Os Keyes, Jevan Hutson, and Meredith Durbin, [“A Mulching Proposal: Analysing and Improving an Algorithmic System for Turning the Elderly into High-Nutrient Slurry”](#) (video midway down the page, watch first ~5 minutes)

RQs due in class

**WEEK 8: Exam 1**

**M 10/10      *Exam 1 Review***

*Optional Exam 1 review session*

**W 10/12      *Exam 1***

**WEEKS 9-11: IS PRIVACY DEAD?**

**M 10/17      *Privacy is Power***

Read: Carissa Véliz, “Privacy is Power”

Watch: New York Times, [“You Should Be Freaking Out About Privacy”](#) (video embedded in middle of page)

RQs due in class

**W 10/19      *Privacy Policy: The FIPPs***

Skim: Department of Homeland Security, [“Privacy Policy Guidance Memorandum”](#)

Watch: Fred Cate, [“Data Privacy and Consent”](#)

RQs due in class

**M 10/24      *The Ethics of Data Collection***

Read: Helen Nissenbaum, *Privacy in Context*, Chapter 7, “Context, Informational Norms, Actors, Attributes, and Transmission Principles” (Skim pp. 129-140; Read pp. 140-147)

RQs due in class

**W 10/26 The Ethics of Data Collection Revisited**

Reading TBD

No RQs

**M 10/31 Engineering Privacy: Anonymization and Its Limits**

Read: Michael Kearns and Aaron Roth, "Algorithmic Privacy" (Part 1)

RQs due in class

**W 11/2 Engineering Privacy: Differential Privacy**

Read: Michael Kearns and Aaron Roth, "Algorithmic Privacy" (Part 2)

Additional resource: ["Differential Privacy: Simply Explained"](#)

RQs due in class

**WEEKS 12-15: JUST FUTURES?**

**M 11/7 Barriers to Accountability**

Read: Jenna Burrell, "How the Machine Thinks: Understanding Opacity in Machine Learning Algorithms"

RQs due in class

**W 11/9 The Reproducibility Crisis in Data Science**

Read: Rickey Carter, Zachi Attia, Francisco Lopez-Jimenez, and Paul Friedman, ["Pragmatic Considerations for Fostering Reproducible Research in Artificial Intelligence"](#)

RQs due in class

**M 11/14 Ethics and Beyond**

Read: Emanuel Moss and Jacob Metcalf, "The Ethical Dilemma at the Heart of Big Tech Companies"

Read: Daniel Susser, ["Ethics Alone Can't Fix Big Tech"](#)

RQs due in class

**W 11/16 The Power of Workers**

Read: Ben Tarnoff and Moira Weigel, ["Silicon Valley Workers Have Had Enough"](#)

Read: Emma Goldberg, ["'Techlash' Hits College Campuses"](#)

RQs due in class

**Thanksgiving Break**

**M 11/28 Tech Abolition?**

Watch: Ruha Benjamin, [“Databite no. 124”](#)  
RQs due in class

**W 11/30 [Your Vision Here]**

No reading  
RQs due in class (yes, you read that right)

**M 12/5 Exam 2 Review**

*Optional Exam 2 review session*

**W 12/7 Final class/Wrap-up**

**Final Exam** **Take-home, due date TBD**