

DS 435-001 *CM/CR

DATA ETHICS

Fall 2020
M/W 4:00-5:15PM
Room: IST 201

PROFESSOR

Dr. Daniel Susser
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E325 Westgate Bldg
Office Hours: By appointment

TEACHING & LEARNING ASSISTANTS

Raphael Rodriguez (PhD Student, TA)
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Lily Jakielaszek (Undergrad LA)
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Office Hours: M 4-7PM, Tu 7-10PM

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 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.

ASSIGNMENTS

Reading Questions (RQs)

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. Reading question responses are due each Monday and Wednesday at 4PM—i.e., just before our class begins. If you do not submit them by the deadline, you will receive a zero for that question set. However, after submitting your question sets on time, you have one week to update, correct, or otherwise modify your responses. That means: as long as you make a good faith effort to do the readings and answer the reading questions on your own and by the deadline, you can use what you learn during class discussions to revise your responses and ensure you get full credit for them.

Case Studies

While the issues we discuss will sometimes feel abstract, the aim of this course is to guide concrete, practical work. For that reason, over the course of the semester you will undertake four detailed case studies. At the beginning of each unit, you will read and respond to the "Case Preview." At the end of each major unit in the course you will demonstrate fluency with the concepts discussed in the preceding weeks by writing a 1000-1500 word "Case Analysis" that utilizes them to analyze a concrete case. I will provide information about the case and an analytical framework for exploring it. Along with that, I will provide a list of "specs" your analysis must exhibit. When evaluating your work, I will determine whether each spec has been met and assign your grade accordingly. If you carefully follow the instructions and meet all the spec requirements, you will receive full credit for your assignment. You will submit your completed case analyses through Canvas before midnight on the due dates listed in the course schedule below. I will deduct three points from late submissions, and continue to deduct an additional three points each 24 hours after the initial deadline.

GRADING

Grades for this course are calculated on a points system. As described below, all the points for all of your assignments total 180 points. You get five freebies—I calculate grades out of 175 points. To earn an A, you must receive at least 162 points. The rest of the grading scale is listed below.

| | |
|----------------------|------------------------------------|
| Syllabus Quiz | 3 points |
| Reading Questions | 85 points total |
| Case Previews | 12 points total (4 x 3pts) |
| <u>Case Analyses</u> | <u>80 points total (4 x 20pts)</u> |
| | 180 points total |

Grading scale: A (162-180pts), A- (157-161pts), B+ (152-160pts), B (145-151pts), B- (140-144pts), C+ (134-139pts), C (127-133pts), C- (122-126pts), D+ (117-121pts), D (110-116pts), D- (105-109pts), F (<105pts)

EXTRA CREDIT

As described in the “Grading” section, above, while there are 180 points total for the course, everyone gets five freebies—I calculate grades out of 175. Beyond that, there are no extra credit opportunities in this course.

CLASS MEETINGS (IN-PERSON AND ONLINE)

This course has both “mixed mode” and “fully remote” contingents. That means some students will have the opportunity to meet in person, while others have chosen to go fully online. My goal this semester is to use in-person meetings to help set the tone and cadence of the course, and to build rapport amongst the class. At the same time, I do not want to expose myself or you all to unnecessary risk. For those enrolled in the CM (“mixed mode”) version of this course, we will meet in person at the beginning and end of each module (as indicated in the schedule below). At the beginning of modules, I will use in-person class time to frame the ideas and arguments we will be taking up in the coming weeks. At the end of the module, I will use that time to recap and synthesize, and to help troubleshoot issues in advance of your case studies coming due. All other class sessions will be conducted over Zoom. If you are enrolled in the CR (“fully remote”) version of the course, all meeting will take place over Zoom. As I describe in the “Attendance” section, below, for both CM and CR students, all meetings—in person and online—are optional.

ATTENDANCE

Obviously, this is a strange semester, so we’re going to do things differently than I normally would. In order to ensure that you all can succeed in this course, regardless of what happens—i.e., if you get sick or have to isolate, if I get sick and have to isolate, if the campus shuts down, etc.—I have designed the course to be doable entirely asynchronously and online. As such, *you are not required to attend classes—either in person or over Zoom—this semester*. The only formal requirement is that you submit your reading question responses and case studies on time. Having said that, much of the material we’re covering this semester is difficult, and synchronous discussion and interaction will be extremely valuable as you attempt to work through it. So, while attendance at in-person and online classes is not required, it is highly encouraged. I hope you’ll attend as much as possible.

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 will do whatever I can (within reason) to ensure that you do. 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/>

COVID-19 STATEMENT ON MASKING AND SOCIAL DISTANCING IN THE CLASSROOM

We know from existing scientific data that wearing a mask in public can help prevent the spread of COVID-19 in the community. Just as you're expected to wear a shirt and shoes to class every day, everyone — including the instructor and TAs — are required to wear a face mask in University buildings, including classrooms and labs. You **MUST** wear a mask appropriately (i.e., covering both your mouth and nose) in the building if you are attending class in person. Masks have been provided for students, faculty, and staff, and everyone is expected to wear one while on campus or out in the community.

All students, faculty and staff are expected to maintain social distancing (i.e., maintain at least six feet of space between individuals) when possible. Seating patterns and attendance patterns, including assigned seating and closed-off desks/chairs/room sections, have been established to help

allow for this distance for your safety. It is also important to follow related guidance communicated by the University and via public postings/signage related to directional traffic flow and maximum occupancy of spaces.

You are not permitted to consume food or drink in classrooms, except for water. If you must drink water, please be especially conscious of maintaining social distancing and minimizing the time your mask is moved aside. Or, better yet, use a straw. Cooperation from EVERYONE will help control the spread of the virus and help us get back to the previous version of campus life as quickly as possible.

Students with conditions that make it difficult to wear a mask or who choose not to wear a mask may not attend class in person. If you plan not to attend class for this reason, please let me know during the first week of class and I will arrange for accommodations. This is to protect your health and safety as well as the health and safety of your classmates, instructor and the University community. Anyone attending class in person without a mask will be asked to put one on or leave. Refusal to comply with University policies is a violation of the Student Code of Conduct. Students who refuse to wear masks appropriately may face disciplinary action for Code of Conduct violations. See details here: <https://studentaffairs.psu.edu/support-safety-conduct/student-conduct/code-conduct>

COURSE SCHEDULE

WEEK 1: IS BETTER TECH GOOD?

M 8/24 *Introductions*

Class meeting online

W 8/26 *Does Improved Technology Mean Progress?*

Class meeting online

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

RQs due by 4PM

Syllabus Quiz due Friday August 28th before midnight

WEEKS 2-4: CAN TECHNOLOGIES EXPRESS VALUES?

M 8/31 *Values: A Preliminary Exercise*

Class meeting in person

Read: Case Preview, "Newsfeed"

RQs due by 4PM

Case Preview, "Newsfeed" due by 4PM

W 9/2 **Is Technology Value-Neutral or Value-Laden?**

Class meeting online

Watch: Eddie Izzard, [“The Gun Thing”](#) [warning: slightly explicit!]

Read: Langdon Winner, “Technologies as Forms of Life” (esp. pp. 5-10)

RQs due by 4PM

M 9/7 **Values and Design**

Class meeting online

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

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

RQs due by 4PM

W 9/9 **Three Case Studies**

Class meeting online

Read: Robert Rosenberger, [“How Cities Use Design to Drive Homeless People Away”](#)

Watch: Vox, [“Color film was built for white people. Here’s what it did to dark skin.”](#)

Read: Alex Marzano-Lesnevich, [“Traveling While Trans”](#)

RQs due by 4PM

M 9/14 **Algorithms as Opinions: Models, Choices, and Assumptions**

Class meeting online

Watch: Cathy O’Neil, [“The Truth About Algorithms”](#)

Read: Cathy O’Neil, *Weapons of Math Destruction*, Chapter 1, “Bomb Parts”

RQs due by 4PM

W 9/16 **Algorithms as Opinions: Proxies and Optimization**

Class meeting in person

Read: Cathy O’Neil, *Weapons of Math Destruction*, Chapter 3, “Arms Race”

RQs due by 4PM

Case Analysis, “Newsfeed” due Friday September 18th before midnight

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

M 9/21 **Judged By Machines**

Class meeting in person

Read: BBC, [“The Algorithms That Make Big Decisions About Your Life”](#)

Additional examples: AI Now Institute, [“Automated Decision Systems: Examples of Government Use Cases”](#)

RQs due by 4PM

Case Preview, “Admissions” due by 4PM

W 9/23 **Guilt by Association**

Class meeting online

Read: Lori Andrews, [“Facebook is Using You”](#)

Read: danah boyd, Karen Levy, and Alice Marwick, “The Networked Nature of Algorithmic Discrimination”

RQs due by 4PM

M 9/28 **Algorithmic Bias: Accuracy and Bias**

Class meeting online

Read: Ali Breland, [“White Code, Black Faces”](#)

Watch: Joy Buolamwini, [“How I’m Fighting Bias in Algorithms”](#)

RQs due by 4PM

W 9/30 **Algorithmic Bias: Varieties of Inaccuracy**

Class meeting online

Read: Pro Publica, [“Machine Bias”](#)

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

RQs due by 4PM

M 10/5 **Algorithmic Bias: Sources of Bias**

Class meeting online

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

Read: Harini Suresh, [“The Problem with ‘Biased Data’”](#)

Optional further reading: Harini Suresh and John Guttag, [“A Framework for Understanding Unintended Consequences of Machine Learning”](#)

RQs due by 4PM

W 10/7 **Algorithmic Bias: Building Fairer Algorithms**

Class meeting in person

Read: Andrew Selbst, danah boyd, Sorelle Friedler, Suresh Venkatasubramanian, and Janet Vertesi, “Fairness and Abstraction in Sociotechnical Systems” (pp. 1-8)

RQs due by 4PM

Case Analysis, “Admissions” due Friday October 9th before midnight

WEEKS 8-11: IS PRIVACY DEAD?

M 10/12 **Our Data, Our Selves**

Class meeting in person

Read and watch: New York Times Editorial Board, [“Total Surveillance is Not What America Signed Up For”](#) and [“You Should Be Freaking Out About Privacy”](#) (video embedded in middle of page)

RQs due by 4PM

Case Preview, "Contact Tracing" due by 4PM

W 10/14 **Kafka and Orwell**

Class meeting online

Read: Daniel Solove, "Kafka and Orwell: Reconceptualizing Information Privacy"

Optional video: Glenn Greenwald, ["Why Privacy Matters"](#)

Optional video: Alessandro Acquisti, ["What Will a Future Without Secrets Look Like?"](#)

RQs due by 4PM

M 10/19 **Privacy Policy: The US Approach**

Class meeting online

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

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

Optional further reading: Daniel Solove, "Privacy Self-Management and the Consent Dilemma" (pp. 1880-1893)

RQs due by 4PM

W 10/21 **Privacy Policy: The European Approach**

Class meeting online

Read: Natasha Lomas, ["WTF is GDPR?"](#)

Additional resource: "GDPR Cheat Sheet"

RQs due by 4PM

M 10/26 **Privacy in Context: Privacy as Contextual Integrity**

Class meeting online

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 by 4PM

W 10/28 **Privacy in Context: How to Judge Appropriate Flow**

Class meeting online

Read: Helen Nissenbaum, *Privacy in Context*, Chapter 7, "Context, Informational Norms, Actors, Attributes, and Transmission Principles" (Read pp. 148-150; Skim pp. 150-157)

RQs due by 4PM

M 11/2 **Privacy Engineering: Anonymization and Its Limits**

Class meeting online

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

RQs due by 4PM

W 11/4 *Privacy Engineering: Differential Privacy*

Class meeting in person

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

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

RQs due by 4PM

Case Analysis, “Contact Tracing” due Friday November 6th before midnight

WEEKS 12-14: CAN MACHINES BE GOVERNED?

M 11/9 *Accountable Algorithms*

Class meeting in person

Read: Nicholas Diakopoulos and Sorelle Friedler, [“How to Hold Algorithms Accountable”](#)

Skim: [“Principles for Accountable Algorithms and a Social Impact Statement for Algorithms”](#)

RQs due by 4PM

Case Preview, “TBD” due by 4PM

W 11/11 *Barriers to Transparency and Accountability*

Class meeting online

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

RQs due by 4PM

M 11/16 *Datasheets for Datasets*

Class meeting online

Read: Timnit Gebru, Jamie Morgenstern, Briana Vecchione, Jennifer Wortman Vaughan, Hanna Wallach, Hal Daumé III, and Kate Crawford, [“Datasheets for Datasets”](#)

RQs due by 4PM

W 11/18 *The Value of Reproducible Data Science*

Class meeting online

Read: Rickey Carter, Zachi Attia, Francisco Lopez-Jimenez, and Paul Friedman, [“Pragmatic considerations for fostering reproducible research in artificial intelligence”](#)

RQs due by 4PM

Thanksgiving Break

M 11/30 *Who’s Responsible for Ethical Tech?: Ethical Engineers*

Class meeting online

Read: Phillip Rogaway, "The Moral Character of Cryptographic Work" (pp. 1-10)

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

RQs due by 4PM

W 12/2 *Who's Responsible for Ethical Tech?: Democratic Governance*

Class meeting online

Read: Annette Zimmermann, Elena Di Rosa, and Hohan Kim, "[Technology Can't Fix Algorithmic Injustice](#)"

Read: Siva Vaidhyanathan, "[There's No Such Thing as a Tech Expert Anymore](#)"

RQs due by 4PM

M 12/7 *Buffer Day/TBD*

Class meeting online

TBD

W 12/9 *Final class/Wrap-up*

Class meeting online

Case Analysis, "TBD" due Friday December 11th before midnight