Course Syllabus for SIADS 503: Data Science Ethics

How to Get Help

If you have questions concerning the degree program, encounter a technical issue with Coursera, or issues using Slack, please submit a report to the ticketing system at umsimadshelp@umich.edu.

If you have an issue specific to the Coursera environment, you can also begin a live chat session with Coursera Technical Support (24/7) or view Coursera troubleshooting guides. (you may be asked to log in to your Coursera account).

For questions regarding course content, refer to the **Communications Expectations** section below.

Course Overview and Prerequisites

This class will teach you to recognize where ethical issues can arise when applying data science to real world problems. It will bring more analytic precision to ethical debates about the role that data science, machine learning, and artificial intelligence play in consequential decision-making in commerce, employment, finance, healthcare, education, policing, and other areas. Largely through discussion of case studies, we will focus on ways to conceptualize, measure, and mitigate harm in data-driven decision-making. You will learn to think critically about how to plan, execute, and evaluate a data science project with ethical concerns in mind, and how to cope with novel challenges for which there are often no easy answers or established solutions.

To do so, you will learn key technical, ethical, policy, and legal terms and concepts that are relevant to ethical assessment in data science; learn about some of the common approaches and emerging tools for mitigating or managing these ethical concerns; and gain exposure to readings that will help you understand the current ethical and regulatory environment and to anticipate future developments. Ultimately, the class will teach you how to reason through these problems in a systematic manner and how to justify and defend your approach to dealing with them.

The pre-requisite for this course is SIADS 501 Being a Data Scientist.

Instructor and Course Assistants
Instructor: Christian Sandvig - csandvig@umich.edu
Course Assistant: Melissa Chalmers - mechalms@umich.edu
Graduate Student Instructor: Jaleesa Turner - jaleesa@umich.edu

Communication Expectations
Contacting instructor and course assistants: Course channel in Slack (siads503_wi20)
Email response time: 24 - 48 hours
Slack response time: 24 - 48 hours

Required Textbook
There is no required textbook for this course.

You will be given a list of required and recommended readings within the course. Online access to these readings are provided through the University of Michigan Library or through approved online sources. For resources provided through the library, you will be asked to sign in with your UMich uniquename and password to access these materials.

Technology Requirements (unique to this course)
None

Accessibility
[Screen reader configuration for Jupyter Notebook Content (not applicable to this course)](#)

Learning Outcomes
1. Identify potential harms of data collections, aggregation, and analysis typically found in applied data science contexts.
2. Use the most important terminology of ethics that applies to data science to explain how to use data sources ethically, explain why data sources may present ethical problems, and describe how ethical guidelines for data scientists can be improved upon.
3. Write ethical assessments (e.g., a memorandum) of a data science analysis or an automated system incorporating data science.
4. Articulate the reasoning behind the most important ethical challenges of data science as applied to course domains of privacy, bias/classification, provenance/aggregation and accountability/consequences.

Course Schedule
This course **begins on Wednesday, March 4, 2020** and **ends on Tuesday, March 31, 2020**.

Weekly **Quizzes** and **Assignments will be due on Tuesdays at 11:59 pm** (time zone = Ann Arbor, Michigan = Eastern Time).

Schedule of Weekly Office Hours via Zoom:
- Please refer to the Live Events section from the course menu

Grading

Course Assignment	Percentage of Final Grade
Wk 1 Quiz - Introduction and Data Privacy	2.5%
Wk 1 Writing Assignment - Memo About a Privacy Concern	15%
Wk 2 Quiz - Bias and Classification	2.5%
Wk 2 Writing Assignment - Evaluation of the What-If Tool	25%
Wk 3 Quiz - Accountability and Consequences	2.5%
Wk 3 Writing Assignment - Perform an Algorithmic Impact Assessment	25%
Wk 4 Quiz -Data Provenance and Aggregation	2.5%
Wk 4 Writing Assignment - Design an Ethics Pledge, Oath, or Checklist	25%
Total	**100%**

NOTE: All assignments are required to earn credit for this course.

Course Structure

Each week, this course consists of recorded **lectures** and an **office hour** produced by the teaching team. Lectures consist of overview material about **concepts** as well as the discussion of **case studies**. In addition, a **guest speaker** will visit or we will take a **field trip**. This will provide one or more additional recorded lectures, interviews, or conversations. Each week there will be both **required readings** and recommended ones.

A low-stakes, open-book weekly **quiz** will provide an incentive to keep up with the readings/viewing. The primary work of the course is one **writing assignment** each week.

Lectures supplement but do not always review or duplicate the readings; readings supplement but do not always duplicate the lectures. That means some of the course content is available only from a lecture or a reading. For instance a concept may not be mentioned in lecture, but it may be the key point of a reading. Students are still responsible for that material.

Guidelines for Dialogue

This seminar practices the "Guidelines for Dialogue" developed by students and faculty from the University of Michigan [Program on Intergroup Relations](). That means that in discussions (including written online discussion forums) we will do our best to:

1.   Maintain confidentiality. We want to create an atmosphere for open, honest exchange.
2.   Commit to learning from each other. We will listen to other and not talk at each other. We acknowledge differences among us in backgrounds, skills, interests, identities and values. We realize that it is these very differences that will increase our awareness and understanding through this process.
3.   Not demean, devalue, or "put down" people for their experiences, lack of experiences, or difference in interpretation of those experiences.
4.   Trust that people are always doing the best they can. We will give each other the benefit of the doubt. We will assume we are all trying our hardest and that our intentions are good even when the impact is not.
5.   Challenge the idea and not the person. If we wish to challenge something that has been said, we will challenge the idea or the practice referred to, not the individual sharing this idea or practice.
6.   Speak our discomfort. If something is bothering us, we will share this with the group. Often our emotional reactions to this process offer the most valuable learning opportunities.
7.   Step Up, Step Back. We will be mindful of taking up much more space than others. On the same note, empower ourselves to speak up when others are dominating the conversation.
8.   Not to freeze people in time. We are all works in progress. We will be willing to change and make space for others to do so. Therefore we will not assume that one comment or one opinion made at one time captures the whole of a person's character.

--The Program on Intergroup Relations, University of Michigan, 2012

Letter Grades, Course Grades, and Late Submission Policy

Refer to the [MADS Assignment Submission and Grading Policies]() section of the UMSI Student Handbook (access to Student Orientation course required).

Final letter grades for the course will be calculated using the following scale: A 93%+; A- 90-92%; B+ 87-89%; B 83-86%; B- 80-82%; C+ 77-79%; C 73-76%; C- 70-72%; D+ 67-69%; D 63-66%; D- 60-62%; E 59% or below.

When a writing assignment is given a letter grade, it is represented in the gradebook as the middle of the range listed above (e.g., B+ is recorded as 88%). If the range contains an odd number of values the higher median is used (e.g., a C is recorded as 75%). An A+ is recorded as 100%.

For this course, **late work results in a reduction of one letter grade per day (10% on the above scale)**.

Accommodations

Refer to the Accommodations for Students with Disabilities section of the UMSI Student Handbook (access to the Student Orientation course required).

Use the Student Intake Form to begin the process of working with the University's Office of Services for Students with Disabilities.

Library Access

Refer to the U-M Library's information sheet on accessing library resources from off-campus. For more information regarding library support services, please refer to the U-M Library Resources section of the UMSI Student Handbook (access to the Student Orientation course required).

Student Mental Health

Refer to the University's Resources for Stress and Mental Health website for a listing of resources for students.

Student Services

Refer to the Introduction to UMSI Student Life section of the UMSI Student Handbook (access to the Student Orientation course required).