

University of Oklahoma
School of Computer Science
CS 4083/5083: Responsible and Ethical AI/ML
Fall Semester 2025

Course Meeting Time & Location: Mondays 5-7:40pm, Physical Sciences Center 0404

Instructor: Dr. Amy McGovern (amcgovern@ou.edu)

Office Hours:

- Mondays 1-2pm online (zoom link posted in canvas)
- Thursdays 11am-noon NWC 2506
- Also available by appointment, just email me
- Note: Office hours are **for you!** They are times in which you may ask questions about course content, delve deeper into the topic through conversation with me, share concerns you have about the course, and/or explore career or graduate school opportunities.

Learning Management System/website: <https://canvas.ou.edu>

Other Course Links: Resources will also be available on aiethics-fall2025.ai2es.org

Prerequisites: CS 4013/5013 or CS 4033/5033 or CS 5043

Course Description

This course focuses on how to ethically and responsibly create Artificial Intelligence (AI). Topics will include responsible conduct of research, ethical scientific conduct, ownership of ideas, algorithms and data, and ethics of developing AI. Learning activities include active discussions and debates, writing, and projects.

Specific topics will include:

- Bias: How do the biases in our data create biases in the AI algorithms? How can we adjust for this bias in our data collection and in our learning algorithms to minimize the effects?
- Transparency: As we develop trustworthy AI, are the algorithms transparent to all populations? Our focus group is expert scientists, but does this create a lack of trust with the general public? What can we do to enhance the overall transparency of the algorithms for everyone?
- Liability: Who is responsible if an AI algorithm produces an incorrect forecast and people are killed or property is lost? Are there policies that can help reduce liability? Who is responsible if a self-driving car makes a mistake?
- Humanity: How do machines affect our behavior and interaction? How do we properly study trustworthy AI with human subjects? Does the difference between experts and the general public matter for the overall trustworthiness of AI?
- Security: How do we protect the critical algorithms from deliberate errors in data? How can we protect the AI from security breaches?
- Employment: As AI algorithms become integrated into the scientific workflow, how does that affect employment? Do jobs disappear or do they just change and require new training? How does this potentially restructure society?
- Policy: What policies exist to govern the use and development of AI? Are there any policies guiding the ethical use of AI?

- Data sharing: When you share data used to train an AI algorithm, are there ethical issues you need to consider? How well can you anonymize the data that you release? Is there harm from sharing the data?

Learning Outcomes

- Identify the potential ethical implications of data collection
 - 5083 only: Design solutions to ethically collect data
- Identify sources of bias for AI algorithms
- Identify ways to reduce bias in AI algorithm development
 - 5083: Design novel solutions to reduce bias in AI development and application
- Communicate effectively across disciplines, in public discourse, and politically

Texts and Materials

Required:

- Race After Technology by Ruha Benjamin
- Weapons of Math Destruction by Cathy O'Neil
- The Ethical Algorithm: The Science of Socially Aware Algorithm Design by Michael Kearns and Aaron Roth
- Data Feminism by Catherine D'Ignazio and Lauren F. Klein (available online for free)

Selected readings from the following will also be provided:

- On Being a Scientist published by the National Academies Press
- Recent scientific articles or books on AI ethics (these will be provided as PDFs on canvas)

Learning Activities, Assignments, and Assessment

What you get out of a course depends on what you put into it! You will accumulate points on a variety of activities for this course, including the following list.

- In-class discussions and debates
- Writing, including both creative writing and persuasive writing
- Semester-long project exploring an AI ethics topic in depth
- Self-assessment of your learning

Students enrolled in the 5000 level of the course will have additional requirements for each assignment beyond the students in the 4000 level.

- The semester-long project will require a more in-depth analysis for students enrolled in the 5000 level. In addition, 5000 level students will need to propose and create a unique project, while 4000 level students can re-create a project from the literature.
- Students in the 5000 level will be answering additional questions in their writing assignments. In addition, their critical thinking and analysis answers will be expected to be more in-depth. For example, if a student has to explain why an AI system performed poorly in a specific task, 5000 level students would be expected to have a more in-depth analysis of how the system failed and how it could be prevented in the future.

Participating in class is one of the best ways to learn so please ask questions and attend class. All assignments will be evaluated using a rubric that will be posted when each assignment is released. This will also be available on canvas.

Assigning Grades (Grading Overview and Grading Scale)

To give you a fair grade at the end of the semester, grades will be assigned based on the points for each assignment.

Assignment	Details	Percentage
Homework assignments	Reading and other stuff assigned to do before class. This is graded via grading declarations.	20%
Class participation	Attending class, asking questions both through submission of questions and in class, and actively engaging throughout class	25%
Presentations	These are submitted as a group, every group must present at least 10 times during the semester to be eligible for full credit	25%
Semester Project		30%

Self-assessment will be used as input to the points for the daily reading assignments as well as the in-class discussion and debates. As needed, grade cutoffs may move below 90/80/70/60 but will never be moved above these. A grade of ≥ 90 will always be an A, while an 87 could potentially be an A depending on any adjustments that are needed to ensure grading is always fair.

- **Grade questions:** To maintain fairness in grading, the items should be brought to the person who graded it. To maintain fairness, all disagreements about grading should be brought to our attention within one week of when the item was returned.
- **Online Grade Summary:** Canvas has a grade book that I will use to store all of your grades. It is your responsibility to verify that the grades on Canvas are correct. If an error is found, bring the document to me and I will correct Canvas.
- **Due dates:** You have two free “life happens” days that will give you a no-questions-asked 24 hour extension on any assignment that is not an in-class. You can miss multiple in-class discussions for illness/emergencies (see below). Once your “life happens” days are used up, assignments can be turned in up to three days late with the grade dropping 10% per day that it is late. No homework or project will be accepted beyond 72 hours after the original due date.
- **Sick days/Emergencies:** Do not panic! If you are sick, please let me know as soon as possible and focus on getting well. We will address it when you are well. If you are dealing with an emergency, check back in after your emergency is over and we will figure out how to handle any assignments that you missed. To reduce the spread of COVID, if you are feeling unwell, please remain home but contact me to get access either to a live stream or a recorded version of the class.

- **Project:** Your final project deadline will be due the last week of classes. Per university policy, you may turn this project in prior to pre-finals week if you have completed the project.

Course Policies

The following set of rules will help keep us all on the same page all semester and help to ensure fair treatment for all students.

The outside world allows collaboration and so do we, but there are rules to follow to ensure that you learn the material.

Expectations for Academic Integrity and Plagiarism

Academic misconduct hurts everyone but particularly the student who does not learn the material. **All work submitted for an individual grade must be the work of that single individual.**

- Your project code and writeups must be written exclusively by you or your group. **Unless approved in advance with Dr. McGovern, the use of any downloaded code or code taken from a book (whether documented or undocumented) is considered academic misconduct.**
- **The use of generative AI to create your writing or code for any assignment or project will be considered a form of academic misconduct.**
- Helping each other cannot consist of copying code or solutions. If someone offers to help you this way, they are not helping you to learn the material!
- For the projects, students working in group projects are expected to share code within the project group but you should not share beyond your group.
- Upon the first documented occurrence of academic misconduct, I will report it to the Office of Academic Integrity. The [Students Guide to Academic Integrity](#) describes this process.

Tentative Schedule, Subject to Change

- Week 1: Introduction and Ethical Frameworks
 - Logistics and introduction. Why are we work on ethical and responsible AI?
 - What are the key historical ethical frameworks?
 - Assigned: Watch the Coded Bias movie (available for free from OU libraries).
 - Assigned: Parts of *Race After Technology*
- Week 2: Labor Day holiday
- Week 3: Real-world Implications of unethical AI
 - Discussion of Coded Bias and *Race After Technology*
 - Assigned: Parts of *Automating Inequality*
 - Assigned: Identify project groups.
- Week 4: Real-world Implications of unethical AI
 - Discussion of Automating Inequality
 - Assigned: Parts of *Weapons of Math Destruction*
 - Assigned: Project proposals.
- Week 5: Real-world Implications of unethical AI

- Discussion of *Weapons of Math Destruction*, how AI is affecting humanity, both in immediate impact on our lives and in our jobs.
 - Assigned: Data Matters
 - Assigned: Project checkpoint 1
- Week 6: Data Matters
 - Discussions on AI ready data and how data affects the AI life cycle and how to collect data ethically and responsibly
 - Assigned: selected readings from *Data Feminism* and *Atlas of AI*
- Week 7: Data Matters
 - Discussions on AI ready data and how data affects all the AI life cycle and how to collect data ethically and responsibly
 - Assigned: selected readings from *Data Feminism* and *Atlas of AI*
- Week 8: The AI Economy
 - Discussions on AI ready data and how data affects all the AI life cycle and how to collect data ethically and responsibly
 - Assigned: selected readings from *Data Feminism* and *Atlas of AI*
 - Assigned: Project checkpoint 2.
- Week 9: Creating ethical responsible AI: Universal design and co-production
 - Discussion: What is universal design? What is co-production?
 - Assigned: selected readings including the latest NIST AI risk framework, Co-production papers, and *Design Justice*
- Week 10: Creating ethical responsible AI: Transparency and Trust
 - Discussion: How does model transparency affect trust
 - Assigned: Selected readings in explainable AI methods, selected readings in trustworthy AI, history of trust in AI and automated methods
- Week 11: Creating ethical responsible AI: Laws and Policies
 - Discussion: What kind of policies do we need for AI?
 - Assigned: Project checkpoint 3.
 - Assigned: Selected readings from current government policies on AI worldwide
- Week 12: Creating ethical responsible AI: Laws and Policies
 - Discussion: What kind of policies do we need for AI?
 - Brainstorming on choice of policy to propose for following week
 - Assigned: Project checkpoint 3.
 - Assigned: Selected readings from current government policies on AI worldwide
- Week 13: Creating ethical responsible AI: Embedding Ethics
 - Discussion: What kind of policies do we need for AI?
 - In-class debate and discussion on a proposed policy for AI and ethics for a class-chosen specific application area
 - Assigned: Selected readings from *Ethical Algorithm*
- Week 14: Creating ethical responsible AI: Embedding ethics
 - Discussion: Can we embed ethical actions directly into the algorithms?
 - Assigned: Selected readings from *Ethical Algorithm*
- Week 15: Creating ethical responsible AI: AI and scientific integrity
 - Discussion: What are the current guiding principles on responsible research? How do these apply to AI?

- Assigned: Selected readings from *On Being a Scientist* and guidance from national and international organizations on AI and National Academies
- Week 16: Looking to the future of AI and its applications broadly
 - Discussion: This is deliberately left to be filled in as the semester evolves because AI is evolving so rapidly that I want to be sure we can discuss very current topics!
 - Assigned: readings will be determined a week before, drawn from current news and literature on AI and AI ethics
- Week 17: Finals week
 - Evening classes have no finals specific time. Your final project paper is due the Monday of finals week by 7:40 (when our class would meet, if we met that week)

University Policies

Mental Health Support Services

Support is available for any student experiencing mental health issues that are impacting their academic success. Students can either be seen at the University Counseling Center (UCC) located on the second floor of Goddard Health Center or receive 24/7/365 crisis support from a licensed mental health provider through [TELUS Health](#). To schedule an appointment or receive more information about mental health resources at OU please call the UCC at 405-325-2911 or visit [University Counseling Center](#). The UCC is located at 620 Elm Ave., Room 201, Norman, OK 73019.

Title IX Resources and Reporting Requirement

The University of Oklahoma faculty are committed to creating a safe learning environment for all members of our community, free from gender and sex-based discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking, in accordance with Title IX. There are resources available to those impacted, including: speaking with someone confidentially about your options, medical attention, counseling, reporting, academic support, and safety plans. If you have (or someone you know has) experienced any form of sex or gender-based discrimination or violence and wish to speak with someone confidentially, please contact [OU Advocates](#) (available 24/7 at 405-615-0013) or [University Counseling Center](#) (M-F 8 a.m. to 5 p.m. at 405-325-2911).

Because the University of Oklahoma is committed to the safety of you and other students, and because of our Title IX obligations, I, as well as other faculty, Graduate Assistants, and Teaching Assistants, are mandatory reporters. This means that we are obligated to report gender-based violence that has been disclosed to us to the Institutional Equity Office. This means that we are obligated to report gender-based violence that has been disclosed to us to the Institutional Equity Office. This includes disclosures that occur in: class discussion, writing assignments, discussion boards, emails and during Student/Office Hours. You may also choose to report directly to the Institutional Equity Office. After a report is filed, the Title IX Coordinator will reach out to provide resources, support, and information and the reported information will remain private. For more information regarding the University's Title IX Grievance procedures, reporting, or support measures, please visit [Institutional Equity Office](#) at 405-325-3546.

Reasonable Accommodation Policy

The University of Oklahoma (OU) is committed to the goal of achieving equal educational opportunity and full educational participation for students with disabilities. If you have already established reasonable accommodations with the Accessibility and Disability Resource Center (ADRC), please [submit your semester accommodation request through the ADRC](#) as soon as possible and contact me privately, so that we have adequate time to arrange your approved academic accommodations.

If you have not yet established services through ADRC, but have a documented disability and require accommodations, please complete [ADRC's pre-registration form](#) to begin the registration process. ADRC facilitates the interactive process that establishes reasonable accommodations for students at OU. For more information on ADRC registration procedures, please review their [Register with the ADRC](#) web page. You may also contact them at (405)325-3852 or adrc@ou.edu, or visit www.ou.edu/adrc for more information.

Note: disabilities may include, but are not limited to, mental health, chronic health, physical, vision, hearing, learning and attention disabilities, pregnancy-related. ADRC can also support students experiencing temporary medical conditions.

Religious Observance

It is the policy of the University to excuse the absences of students that result from religious observances and to reschedule examinations and additional required classwork that may fall on religious holidays, without penalty. [\[See Faculty Handbook 3.15.2\]](#)

Adjustments for Pregnancy/Childbirth Related Issues

Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact the Accessibility and Disability Resource Center at 405/325-3852 and/or the Institutional Equity Office at 405/325-3546 as soon as possible. Also, see the Institutional Equity Office [FAQ on Pregnant and Parenting Students' Rights](#) for answers to commonly asked questions.

Final Exam Preparation Period

Pre-finals week will be defined as the seven calendar days before the first day of finals. Faculty may cover new course material throughout this week. For specific provisions of the policy please refer to OU's [Final Exam Preparation Period policy](#).

Emergency Protocol

During an emergency, there are official university [procedures](#) that will maximize your safety.

Severe Weather: If you receive an OU Alert to seek refuge or hear a tornado siren that signals severe weather.

1. Look for severe weather refuge location maps located inside most OU buildings near the entrances.
2. Seek refuge inside a building. Do not leave one building to seek shelter in another building that you deem safer. If outside, get into the nearest building.
3. Go to the building's severe weather refuge location. If you do not know where that is, go to the lowest level possible and seek refuge in an innermost room. Avoid outside doors and windows.
4. Get in, Get Down, Cover Up

5. Wait for official notice to resume normal activities.
Additional [Weather Safety Information](#) is available through the Department of Campus Safety.

The University of Oklahoma Active Threat Guidance

The University of Oklahoma embraces a Run, Hide, Fight strategy for active threats on campus. This strategy is well known, widely accepted, and proven to save lives. To receive emergency campus alerts, be sure to update your contact information and preferences in the account settings section at one.ou.edu.

RUN: Running away from the threat is usually the best option. If it is safe to run, run as far away from the threat as possible. Call 911 when you are in a safe location and let them know from which OU campus you're calling from and location of active threat.

HIDE: If running is not practical, the next best option is to hide. Lock and barricade all doors; turn off all lights; turn down your phone's volume; search for improvised weapons; hide behind solid objects and walls; and hide yourself completely and stay quiet. Remain in place until law enforcement arrives. Be patient and remain hidden.

FIGHT: If you are unable to run or hide, the last best option is to fight. Have one or more improvised weapons with you and be prepared to attack. Attack them when they are least expecting it and hit them where it hurts most: the face (specifically eyes, nose, and ears), the throat, the diaphragm (solar plexus), and the groin.

Please save OUPD's contact information in your phone.

NORMAN campus: *For non-emergencies call (405) 325-1717. For emergencies call (405) 325-1911 or dial 911.*

TULSA campus: *For non-emergencies call (918) 660-3900. For emergencies call (918) 660-3333 or dial 911.*

Fire Alarm/General Emergency

If you receive an OU Alert that there is danger inside or near the building, or the fire alarm inside the building activates:

1. *LEAVE* the building. Do not use the elevators.
2. *KNOW* at least two building exits
3. *ASSIST* those that may need help
4. *PROCEED* to the emergency assembly area
5. *ONCE safely outside, NOTIFY first responders of anyone that may still be inside the building due to mobility issues.*
6. *WAIT* for official notice before attempting to re-enter the building.

Video: [OU Fire Safety on Campus](#)

Office of Access and Opportunity's Belonging Statement

Why You Belong at the University of Oklahoma: The University of Oklahoma fosters an inclusive culture of respect and civility, belonging, and access, which are essential to our collective pursuit of excellence and our determination to change lives. The unique talents, perspectives, and experiences of our community enrich the learning, and working environment at OU, inspiring us to harness our innovation, creativity, and collaboration for the advancement of people everywhere.

Course Reflection Survey

You'll receive a Course Reflection Survey at the end of each semester for each course that you are enrolled in. I strongly encourage you to complete this survey. Your feedback can help me adjust my class for future semesters to help other students be successful. Your feedback is confidential and I will only receive it after final grades are due. Course Reflection Survey results may also factor into teaching evaluations and annual performance reviews and are shared with department and program chairs.

Copyright Syllabus Statement for In-Person or Online Courses

Sessions of this course may be recorded or live-streamed. These recordings are the intellectual property of the individual faculty member and may not be shared or reproduced without explicit, written consent of the faculty member. In addition, privacy rights of others such as students, guest lecturers, and providers of copyrighted material displayed in the recording may be of concern. Students may not share any course recordings with individuals not enrolled in the class or upload them to any other online environment.

Pre-Finals Week Policies

During pre-finals week, all normal class activities will continue; however, no assignment, test, or examination accounting for more than 3% of the course grade may be assigned, unless it is assigned in advance of pre-finals week and worth less than 10%, or scheduled at least 30 days prior if worth more than 10%. No activity or field trip may be scheduled that conflicts with another class.