WRIT 0590: Fairness in ML

University of Pennsylvania, Spring 2025

Instructor:	Nikita Bezrukov, PhD	**Email:**	nikitab@sas.upenn.edu

This course explores the theme of fairness in machine learning, focusing on how algorithmic systems can perpetuate or mitigate societal biases. It delves into the ethical, technical, and social implications of these systems, examining key concepts such as individual and group fairness, bias detection, and the trade-offs involved in achieving equitable outcomes. In parallel, the course emphasizes academic writing, guiding students in effectively communicating complex ideas, constructing rigorous arguments, and engaging critically with scholarly literature. The course aims to develop both a deep understanding of fairness in ML and strong academic writing skills.

1 Overview of the writing program

- **Overview:** The Critical Writing Program offers discipline- and genre-based seminars focused on scholarly inquiry, taught by full-time faculty from a wide range of disciplines.

- **Curriculum:**
    - Reflects current research in writing studies, emphasizing knowledge transfer and writing in STEM fields.
    - Includes a mix of academic and public writing, teaching students to write in multiple voices, genres, and styles.
    - Focuses on collaborative learning, peer review, and adaptive writing skills.

- **Class Structure:**
    - Small seminars (10-15 students) foster strong peer connections and shared learning experiences.
    - Consistent writing assignments across seminars ensure common ground and shared vocabulary among students.

- **Research and Skills Development:**
    - Emphasizes scholarly research techniques, critical thinking, and problem-solving.
    - Promotes empathy, reasoning, and the ability to communicate effectively in diverse contexts.

- **Assessment:**
    - Includes periodic essays, peer reviews, and final portfolios assessed by both instructors and outside readers.
    - Aligns with best practices in writing studies and aims to cultivate independent judgment and metacognition.

- **Learning Outcomes:** Exceed standards recommended by the Council of Writing Program Administrators and other national organizations, fostering a deep understanding of writing, rhetoric, and research strategies.

2 What to expect

This writing seminar is designed to introduce you to the practices of scholarly engagement and professional rhetoric within a focused, discipline-based scholarly conversation. Through writing, peer review, and collaborative activities, you'll join a discourse community where you'll learn to communicate effectively with peers, engage critically with ideas, and develop the skills necessary to participate in academic and professional communities at Penn and beyond.

2.1 Joining a discourse community

- **Discourse Community:**

  - Group with shared interests, practices, and specialized language.
  - Take your own and your peers' ideas, writing, and reviews seriously.

- **Course Purpose:** Engage in a discipline-based scholarly conversation and learn the basics of scholarly and professional rhetoric.

- **Audience:** Write for classmates as members of your scholarly discourse community, not just for the professor.

- **Collaboration:** Participate in discussions, peer reviews, and collaborative exercises to build connections and community.

- **Skill Development:** Learn to engage with peers and major texts, preparing for future scholarly and professional communities.

2.2 Fundamentals of the learning process

- **Curriculum Structure**: Each module and assignment builds progressively, enhancing what you already know and pushing you toward more advanced writing processes and strategies.

- **Key Objectives**: Learn to identify and navigate different processes, genres, audiences, demands, and deadlines essential for real-world writing.

- **Adaptability over Linear Processes**: While traditional "binge writing" habits may serve some needs, this seminar trains you to adapt flexibly to more complex writing scenarios requiring planning, synthesis, and innovation.

- **Critical Thinking in Research**: Instead of supporting prefabricated theses with sources, you will practice developing original topics, broadening your research, and synthesizing information for diverse contexts.

- **Time and Process Management**: Mastering timelines and managing overlapping writing processes are vital for success in college and careers, addressing challenges businesses often face due to poor time management.

- **Frequent Writing Practice**: Expect regular writing assignments to refine your ability to manage different types of writing and timelines. This will challenge those accustomed to one-size-fits-all approaches but prepares you for greater flexibility and sophistication.

2.3   On perfectionism

- **Avoid Perfectionism Early**: Perfectionist tendencies during the early stages of a project can stifle creativity and prematurely limit potentially brilliant ideas.

- **Embrace "Courageous Drafts"**: Focus on prewriting, planning, and outlining to address the logical and evidentiary demands of your work rather than aiming for polished prose.

- **Drafts as Tools**: Treat drafts as working documents for organizing thoughts and research, not as literary performances.

- **Prioritize Reasoning**: Concentrate on clarity and logic in your arguments, rather than attempting to impress peers with stylistic flourishes.

- **Overcome Fear of Simplicity**: Straightforward writing at the draft stage helps structure ideas and does not compromise your ability to develop literary style later.

- **Expand Your Toolkit**: Through this process, you'll gain new writing strategies and learn when and how to apply different styles effectively.

2.4   Time management

If you find that you are exceeding the recommended six to nine hours of homework that you should devote weekly to each of your college classes, consult with your instructor or with a tutor at the Writing Center. They can give you some advice about how to manage your writing process more effectively.

3   Assignments

3.1   Reading assignments

1. The Course Text

2. Canvas Units and Attached Readings

3. The articles and other readings/research that you generate for your writing projects

3.2   Writing assignments

1. Pre- and Post-Outlines

2. Book Outline and 150-200-Word Summary

3. PowerNotes Matrices

4. White Paper (1,400-1,600 Words; 10+ Sources)

5. Public Argument (600-750 Words)

6. Reflection Letters (2x 1-1.25 Page[s])

7. Job Cover Letter

8. Résumé (1 Page)

9. Peer Reviews

10. PSets (1-2)

11. Presentations (PowerPoint; Elevator Pitch)

3.3   Grades

Grading in this course is predicated upon the fact that you are learning and developing new writing skills and knowledge. You will have ample opportunity to revise high-stakes assignments and 45% of your grade is the final portfolio, which you will be working toward throughout the semester. We will also be providing you with very clear assessment descriptions and frequent feedback. Course grades are distributed as follows:

Coursework: 35%*

Midterm Portfolio: 10%

Final Portfolio: 45%

Attendance: 10%

Students must achieve a passing grade both in Coursework and on the Final Portfolio. The attendance component includes participation in collaborative work, peer reviews, discussions, and collegiality. Missing days when collaborative work is done (including ans especially peer reviews) will affect the grade.

Please note that corrupt, missing, or incorrect files submitted for midterm or final portfolio review will drop by a grade each day until the correct file is submitted; thus the highest grade you can get for your final portfolio if you submit an incorrect or late file and do not replace it within 24 hours is A-; within 48 hours B+, etc.

4   Knowledge Domains and grading parameters

The course focuses on various domains essential for becoming a skillful writer, emphasizing knowledge necessary for adapting to new writing situations. Your competence in these domains will be assessed throughout the course, guiding your progress and areas for improvement.

- **Types of Knowledge:**
  - Declarative Knowledge: Understanding writing questions, audience expectations, and differences between print and digital environments.
  - Procedural Knowledge: Mastery of writing processes and tools needed to complete tasks.
  - Conditional Knowledge: Knowing when and how to apply different writing strategies.
  - Affective Knowledge: Managing emotions and attitudes during the writing process.

- **Scoring System:**
  - Domains are scored on a scale of 0 to 5, with 5 being rare and representing exceptional performance.
  - Scores help identify strengths and areas needing improvement.

- **Grading Criteria:**

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*Which is: White paper (6%), Op-Ed (5%), Peer reviews (5%), Logic (4%), Getting acquainted (3%), Rhetoric (2%), Plagiarism (2%), MicroRhetoric (2%), Workplace genres (2%), Presentation (2%), Reflection Journal (2%).

- **Propositional Content (21%):** Quality of the thesis, logical coherence, and understanding of the subject.
- **Invention (21%):** Originality and creativity in presenting ideas, finding novel connections, and engaging the audience.
- **Rhetoric (21%):** Awareness of the audience, persuasive use of language, and effective organization of content.
- **Genre (21%):** Adherence to and understanding of genre conventions and social purposes.
- **Presentation (10%):** Clarity, organization, formatting, and grammatical accuracy.
- **Aesthetics/Reading Experience (6%):** Ability to create an engaging, pleasurable reading experience.

- **Support and Resources:** Students are encouraged to seek help from professors, TAs, peers, and academic support services to manage challenges and improve their writing skills.

5 Feedback and guidance policy

- **Office Hours**: I am available for individual feedback during my office hours, held on Zoom via the published Calendly schedule. Multiple meetings are possible, and I encourage you to take advantage of this opportunity.

- **Writing Fellows**: For additional feedback, I recommend consulting our TAs (the Writing Fellows) at the Writing Center. They can provide second opinions or alternative perspectives on your work. In fact, I suggest scheduling a meeting with them first.

- **Peer Reviews**: While I won't provide detailed feedback on every submission, peer reviews will play a significant role in your revision process.

- **Mandatory Check-Ins**: I will offer detailed guidance during the following key points in the course:

  - **Getting Acquainted Problem Set**: Feedback around our first meeting.
  - **Logical Structure Review**: After completing Chapters 1–2.
  - **White Paper Draft**: First draft feedback (with additional review included in the midterm portfolio).
  - **Op-Ed Draft**: First draft feedback.
  - **Reflection Notes**: Guidance to build the final reflection letter.

6 Writing support

Students are encouraged to make generous use of the Writing Center (and other Penn resources) while enrolled in their writing seminars as well as thereafter. Writing Fellows who work in the Writing Center were nominated by their writing instructors for their outstanding work; the ten finalists chosen each semester from across the schools and disciplines are not only superb writers and peer reviewers, they are also well-versed in the assessment criteria of the writing seminars. In turn, they complete a semester of coursework and fieldwork devoted to writing pedagogy, co-taught by the director of the writing program and the associate director of the writing center. Students who use the Writing Center are thus assured of carefully selected, knowledgeable writing tutors.

Appointments and drop-in hours are available from Sundays 3:00pm to 9:00pm, Mondays through Thursdays from 9am to 9pm, and Fridays from 1:30pm to 4:30pm. For more information, visit http://writing.upenn. edu/critical/wc.

7   Students with Disabilities

Please let me know if you anticipate any issues that might affect your performance in the class, for example related to the format or requirements of the course; or if you need to make any special arrangements or have emergency medical information you wish to share with me.

If you require disability-related accommodations, such as a note-taker, extended time on timed writings, or captioning, please register with the Office of Disability Services (ODS). Disabilities may include learning, psychiatric, or physical disabilities. ODS can assist you with finding out if you qualify for Americans with Disabilities Act (ADA) accommodations.

Office of Disability Services
Stouffer Commons, Suite 300
3702 Spruce Street
Phone: (215) 573-9235
Email: sdsmail@zimbra.upenn.edu

Monday-Friday, 9:00 AM to 5:00 PM
For other UPenn resources for students with disabilities, visit https://wlrc.vpul.upenn.edu/sds/.

8   Behavioral

8.1   Attendance and catch-up meetings

Attendance: 10% of Final Grade. Attendance is critical to your success in this small, collaboratively-driven seminar. However, you may find that you must miss a class. If so, you are still eligible to earn attendance points by completing the following three steps:

1. File a Course Absence Notice ("CAN") in Path@Penn before or on the day of returning to class;

2. Arrange a brief meeting with me (15-20 minutes) within a week of missing a class;

3. Complete a "catch-up" assignment I will give you at our meeting. "Catch-up" assignments may involve doing an activity you missed in the class, or other work that will help you catch up. You are also welcome to propose a catch-up activity that you think would be helpful for you, perhaps based on conversations with your peers about what you missed.

Please note that this policy does not apply to standard exemptions or absences excused by the university. However, I strongly recommend that you always meet with me (or your other professors) in advance of any excused absences so that you can make arrangements for the class(es) you will be missing. Here is a list of university-excused absences: https://catalog.upenn.edu/pennbook/secular-religious-holidays/.

Regardless of the reason for absence, students are responsible for learning what happened in class.

8.2   Late work

All assigned written work, including peer reviews, must be submitted on time. However, I am generally lenient and can grant you an extension of up to a week or sometimes two weeks, depending on the circumstances. After this period, late work will not be accepted. This extension policy does not apply to the midterm, final portfolios, or peer reviews, all of which must be submitted on time. A late portfolio or peer review will drop a grade each day that it is late; thus the highest grade you can get if you submit an incorrect or late file and do not replace it within 24 hours is A−; within 48 hours B+, and so on.

8.3   Plagiarism policies

- **Plagiarism:** using the ideas, data, or language of another without specific or proper acknowledgment. Example: copying all or part of another person's paper, article, or computer work and submitting it for an assignment, cloning someone else's ideas without attribution, failing to use quotation marks where appropriate, etc.

- **Fabrication:** submitting contrived or altered information in any academic exercise. Example: making up data for an experiment, fudging data, citing nonexistent articles, contriving sources, etc.

- **Multiple submission:** submitting, without prior permission, any work submitted to fulfill another academic requirement.

- **Facilitating academic dishonesty:** knowingly helping or attempting to help another violate any provision of the Code. Example: giving another student a copy of your paper to use; writing the paper for another student; helping another student on a take-home test.

- **Unfair advantage:** attempting to gain unauthorized advantage over fellow students in an academic exercise. Example: obstructing or interfering with another student's efforts in an academic exercise, lying about a need for an extension for an exam or paper, continuing to write even when time is up during an exam, destroying or keeping library materials for one's own use, etc.

In the Critical Writing Program, plagiarism is regarded as a university offense. Instructors are expected to report, in a timely fashion, all incidents of plagiarism to the director of the program.

Plagiarism in most instances will result in an "F" for the writing seminar, for it signals a failure to meet the basic expectations and perform the fundamental tasks of a writing seminar.

All parties to plagiarism are considered equally guilty. If a student shares coursework with another student and they plagiarize it, both are considered guilty.

8.4   Critical Writing Policy on Artificial Intelligence (AI) Models

Artificial Intelligence (AI) is a resource that is available to you as a reader, researcher, and writer. You will find that other classes and professors have a range of Generative AI (GAI) policies, and that workplaces and industries are developing their own best practices for using GAI.

Given that one of the goals of the writing seminar is to build adaptability in writing — to increase your capacity to write in a variety of contexts, and to employ a range of tools and resources to do so — our policy is intended to develop your ability to evaluate which tasks GAI is suited for, and to use GAI tools in an appropriate and ethical manner.

You are welcome to use GAI (e.g., ChatGPT, Copilot, Gemini, Claude, etc.) in your Writing Seminar— unless the instructions for a particular assignment indicate otherwise. Academic integrity, learning outcomes, and harm reduction govern such restrictions in Writing Seminars.

If you use GAI:

- **You must fact-check.** You should note that GAI tools have a tendency to hallucinate, make up incorrect facts and fake citations, and produce inaccurate outputs. Assume that what it produces is wrong unless you know the answer or verify it with a source. For this reason, AI tools work best for topics or processes you understand well. A GAI tool is also predictive, which means they will generate common and most-typical responses to prompts, based on their models. In this class and likely elsewhere, you will be responsible for any inaccurate, biased, offensive, or otherwise unethical content you submit. Failure to fact-check may negatively affect the factuality and integrity of your writing, and thus will adversely affect your grade.

- **You must document your GAI use.** It is good practice, not only in this class but elsewhere, to acknowledge all GAI usage from the start.

  - **Documentation:** If you use GAI at any stage of an assignment—brainstorming, reading, research, drafting, proofreading, etc.—you must conclude the assignment with a statement acknowledging as much and describing the usage. For Midterm and Final Portfolios, such declarations should also appear as an addendum to the Statement of Academic Integrity.
  - **Violations of the policy:** The university's policy on plagiarism and academic integrity applies to your use of AI. Any uncited or improperly cited use of work by other human beings or AI or submission of work by other human beings or AI as your own will be considered a violation of academic integrity. Any violation of this policy will be reported to the Director of the Writing Program and could result in a failing grade on the assignment or in the class.

9 White Paper Topic Clusters

After completing the course book, we will divide into three groups based on your interests. Each group will explore a specific subtopic within the broader scope of the course, collaborating over several weeks. The members of these groups will subsequently work on their individual white paper topics. Despite that, these groups will present their joint work during the final weeks of the semester. The topics are designed to reflect varying degrees of connection to the core theme of the course and are as follows:

1. **Machine Learning in Healthcare** Explore the application of ML in healthcare settings and its implications for fairness.

   - Bias in diagnostic AI systems and its impact on underrepresented groups.
   - Ensuring equitable access to AI-powered healthcare tools in rural areas.

2. **Machine Learning in Justice** Investigate the role of ML in the justice system, focusing on fairness and potential biases.

   - Predictive policing and its disproportionate effects on minority communities.
   - Fairness in bail and sentencing algorithms.

3. **Machine Learning in Hiring and Admissions** Examine the use of ML in hiring and admissions processes and its fairness implications.

   - Addressing bias in resume-screening algorithms.
   - Ensuring fairness in college admissions systems powered by ML.

These clusters allow for both depth and creativity, providing opportunities to apply course concepts to real-world scenarios while addressing critical issues related to fairness in machine learning.

10   Tentative schedule

This schedule is tentative as of the first meeting of our class and is subject to change as the semester progresses. Adjustments may be necessary to accommodate unforeseen circumstances, improve the learning experience, or address the specific needs of the class. Any updates or changes to the schedule will be promptly reflected on the course page, which should be checked regularly for the most accurate and up-to-date information.

§ Getting Acquainted

Thursday, 1/16

- **Read:**
    - Course Policies
    - What to Expect
    - How We Learn to Write: Knowledge Domains
    - Academic Ableism

- **Submit:**
    - Mini Biography
    - Resume
    - Writing Sample and Reflection
    - Academic Reading Strategies Inventory
    - Writing Experience Survey
    - How We Learn

§ Logical Reasoning for Reading and Writing Propositional Content

Tuesday, 1/21

- **Read:** Introduction to Informal Reasoning—Structure, Premises, Proposition
- **Submit:** Logical Structure of Course Text: Chapter 1

Thursday, 1/23

- **Read:**
    - Testing and Evaluating a Proposition
    - Logical Coherence
    - The Vocabulary of Informal Logic: Outlining

- **Submit:** Logical Structure of Course Text: Chapter 1 Revised + Chapter 2

Tuesday, 1/28

- **Read:** Narrative, Poetic and Logical Reasoning
- **Submit:** Logical Structure of Course Text: Chapter 7

Thursday, 1/30

- **Read:** Logical Fallacies
- **Submit:** Logical Structure of Course Text: Chapter 8

Tuesday, 2/4

- **Submit:**
  - Logical Structure of Course Text: Chapter 9
  - Book Summary
- **In Class:** Begin Pre-Outlining for Conventional Paper Topics (due 2/6)

§ Rhetoric

Thursday, 2/6

- **Read:** Introduction to Rhetoric
- **Submit:**
  - Outlining the Rhetorical Situation of a Text
  - Reflection Journal 1

§ Genre, The White Paper, Research, Citation

Tuesday, 2/11

- **Read:**
  - Intro to Genres
  - The White Paper: All tabs up to and including "Proposal and Pre-Outline 1"
- **Submit:** Genre Analysis Collaborative Exercise: The White Paper

Thursday, 2/13

- **Read and Submit:** White Paper Article 1 and White Paper Article 2: Add to PowerNotes Matrix

Tuesday, 2/18

- **Read:** Norming Samples your instructor may assign
- **Submit:** White Paper Proposal and Pre-Outline 1

Thursday, 2/20

- **Read:** White Paper Article 3 and White Paper Article 4: Add to PowerNotes Matrix
- **Submit:** PowerNotes Matrix: Outline 2

Tuesday, 2/25

- **Submit:** White Paper Article 5 and PowerNotes Matrix

Thursday, 2/27

- **Submit:** White Paper Prose Draft 1 and Post-Outline
- **In Class:** Peer Review: White Paper Prose Draft 1

Tuesday, 3/4

- **Read:**
    - Citation as a Community- and Knowledge-Building Practice
    - Citation Styles
    - The Rhetoric of Quotation and Paraphrase
- **In Class:** Coming to Terms: Reading and Exercise

Thursday, 3/6

- **Submit:** White Paper Prose Draft 2 and Post-Outline
- **In Class:** Peer Review: White Paper Prose Draft 2 (due 3/18)

Tuesday, 3/11 and Thursday, 3/13: Spring Break (No Class)

§ Midterm Portfolio

Tuesday, 3/18

- **Submit:**
    - Revision Plans: White Paper (Penn Reviewer)
    - Draft Letter of Reflection: Midterm Portfolio

Thursday, 3/20

- **Submit:** Draft of Midterm Portfolio

Friday, 3/21 (No Class)

- **Submit:** Midterm Portfolio

§ MicroRhetoric, Linguistic Insecurity and Discrimination

Tuesday, 3/25

- **Read:**
    - MicroRhetoric: Overview
    - Introduction to MicroRhetoric: Style
- **Submit:** Linguistic Insecurity and Discrimination in the US
- **In Class:** Languaging Discussion

§ Private-Sector Writing

Thursday, 3/27

- **Read:**
    - Intro to Workplace Genres, Discourse Communities, and Activity Systems
    - Genre and Style
- **In Class:** The Cover Letter: Overview and Genre Analysis Collaborative Exercise
- **Submit**
    - The Résumé
    - Job Cover Letter
    - Reflection Journal 2

§ Justificatory Reasoning, The Op-Ed

Tuesday, 4/1

- **Read:**
  - Overview of Justificatory Reasoning
  - Genre: The Op-Ed
- **In Class:** Genre Analysis Collaborative Exercise: The Op-Ed
- **Submit:**
  - Three Propositions, Audience, and Expertise
  - Venue Checkpoint

Thursday, 4/3

- **Read:** Tips on Visual Rhetoric and Design: The Op-Ed
- **Submit:**
  - Individual Genre Analysis
  - Pre-Outline

Tuesday, 4/8

- **Submit:** Op-Ed Draft 1
- **In Class:** Peer Review: Op-Ed Draft 1

Thursday, 4/10

- **Submit:** Op-Ed Draft 2
- **In Class:** Peer Review: Op-Ed Draft 2 (due 4/15)

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§ Writing for Speech

Tuesday, 4/15

- **Read:** Overview: Spoken versus Written Rhetoric: Pitches & Powerpoints
- **In Class:** Collaborative Genre Analysis
- **Submit:** Revision Plans: Op-Ed (Penn Reviewer)

Thursday, 4/17

- **Read:** Introduction to PowerPoint
- **In Class:** PowerPoint Presentation

Tuesday, 4/22

- **Submit:**
  - PowerPoint Presentation
  - White Paper Pre-Portfolio Draft

§ Final Portfolio

Thursday, 4/24

- **Submit:** Draft Letter of Reflection: Final Portfolio

Tuesday, 4/29

- **Submit:** Draft of Final Portfolio

Wednesday, 4/30 (No Class)

- **Submit:** Final Portfolio