

**The University of Western Ontario
Faculty of Information and Media Studies**

**FIMS 9331—Artificial Intelligence, Ethics, and Human Health
Course Outline, Winter 2024**

Instructor Information

Name: Prof. Luke Stark (pronouns: he/him)

Office: FNB 4035

Student Meetings: By appointment in person or via Zoom (<https://calendly.com/lukestark>)

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please note I will work to answer your email within 24 hours, excluding weekends

Course Information

Course Meetings: Mondays 9am to 11:50am

Location: FNB 4130 and online via Zoom as indicated

OWL site information: TBD

Technical Requirements: Students will require regular or at least consistent access to a computer and internet connection capable of handling streaming video and audio. If this is an issue, please contact me as soon as possible. **Students are strongly encouraged to wear a triple layer non-medical masks in the classroom; higher quality masks such as N95s are preferred.**

Prerequisites or Antirequisites

Enrollment in this course is restricted to graduate students in the Faculty of Information and Media Studies, as well as any student that has obtained special permission to enroll in this course from the course instructor as well as the Graduate Chair (or equivalent) from the student's home program

Courses may be added only during the first week of the term. Courses dropped within the first month of the term will not appear on the student's transcript, while those dropped within the second month of the term will appear with the notation "withdrawn" (WDN). Courses dropped after the second month of the term will be recorded as failures. **The final date to withdraw from this course is March 8, 2024.**

Course Description

This course will provide students with the opportunity to examine the ways artificial intelligence systems and digital automation technologies are reshaping the practices, discourses, and imagined futures of human health, health care, and psychological wellbeing. Through a focus on these technologies' applications in areas such as clinical practice, genetic research, and mental health diagnosis, the course will provide students with a rich understanding of these technologies' histories, technical affordances, ethical and social impacts, and role in debates about the future of human health and healthcare in Canada and around the world.

Course Objectives

In these challenging times, the first objective of the course is to support each other throughout the semester. Additionally, by the conclusion of the course I hope you'll also feel confident to do the following:

- Think expansively about the historical antecedents and social impacts of artificial intelligence and automation technologies such as machine learning, both broadly and in the context of human health
- Analyze and describe how broader controversies around the ethical and social implications of the technologies apply to sectors such as healthcare, precision medicine, and mental health treatment.

- Become adept in applying your knowledge to the rapidly changing public and scholarly conversation around digital automation.
- Develop a mix of critical research skills, and learn to use these skills synthetically, creatively, and thoughtfully to your own analyses and arguments.
- Apply both your knowledge and research skills to a particular set of research problems.

Course Materials

Students will be required to read the entirety of the following book for this class:

Skloot, Rebecca. *The Immortal Life of Henrietta Lacks*. New York: Broadway Books, 2011.

All other course material will be posted to the course OWL site. Any changes will be indicated on the OWL site and discussed with the class. If students need assistance, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800. Google Chrome or Mozilla Firefox are the preferred browsers to optimally use OWL; please update your browsers frequently.

TENTATIVE Weekly Topics and Readings

(please note a final list of readings will be available the first week of class)

1. Introduction

January 8, 2024

Topol, Eric. *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. New York: Basic Books, 2019, Chapters 1 and 2.

Optional pre-reading for further context:

Canadian Institute for Advanced Research (CIFAR). *Building a Learning Health System for Canadians: Report of the Artificial Intelligence for Health Task Force*. July 2020. <https://cifar.ca/wp-content/uploads/2020/11/AI4Health-report-ENG-10-F.pdf>

Future Advocacy. [Ethical, social, and political challenges of artificial intelligence in health](#). Future Advocacy and Wellcome Trust, April 2018.

Health Canada. *Canada's Healthcare System*. 2011. <https://www.canada.ca/en/health-canada/services/health-care-system/reports-publications/health-care-system/canada.html>

World Health Organization. 2021. *Ethics and governance of artificial intelligence for health: WHO guidance*. Licence: CC BY-NC-SA 3.0 IGO. <https://www.who.int/publications/i/item/9789240029200>

2. Epistemology & Evidence

January 15, 2024

Amoore, Louise. "Machine Learning Political Orders." *Review of International Studies*, 2022, pp. 1–17.

Ginzburg, Carlo. "Morelli, Freud and Sherlock Holmes: Clues and Scientific Method." *History Workshop Journal* (2009): 5–36.

Chin-Yee Benjamin, and Ross Upshur. "Three Problems with Big Data and Artificial Intelligence in Medicine." *Perspectives in Biology and Medicine* 62 (2019) : 237-256

Topol, Eric. *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. New York: Basic Books, 2019, Chapter 3.

3. *Biopolitics/Necropolitics*

January 22, 2024

Deleuze, Gilles. 1990. "Postscript on Control Societies." In *Negotiations, 1972-1990*, translated by Martin Joughin, 177–82. New York: Columbia University Press.

Foucault, Michel. "17 March 1976." "*Society Must Be Defended*." New York: Picador, 2003. 239–263.

Mbembé, Achille. 2003. "Necropolitics." *Public Culture* 15 (1): 11–40.

Seminar presentation:

Cave, S., Dihal, K. The Whiteness of AI. *Philosophy of Technology* 33, 685–703 (2020).

4. *Ethics, Fairness & Power*

January 29, 2024

Chen, Irene Y., Emma Pierson, Sherri Rose, Shalmali Joshi, Kadija Ferryman, Marzyeh Ghassemi. "Ethical Machine Learning in Health Care," *Annual Reviews for Biomedical Data Science*, 2021

Hoffmann, Anna Lauren. "Where Fairness Fails: Data, Algorithms, and the Limits of Antidiscrimination Discourse." *Information, Communication & Society* 22.7 (2019): 900–915.

Kalluri, Pratyusha. "Don't Ask if AI Is Good or Fair, Ask How It Shifts Power." *Nature* 583 (2020): 169.

Lecher, Colin. "What happens when an algorithm cuts your health care" *The Verge*, March 21, 2018, <https://www.theverge.com/2018/3/21/17144260/healthcare-medicaid-algorithm-arkansas-cerebral-palsy>

Robinson, David G. 2022. The Kidney Transplant Algorithm's Surprising Lessons for Ethical A.I. Slate, <https://slate.com/technology/2022/08/kidney-allocation-algorithm-ai-ethics.html>

Topol, Eric. *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. New York: Basic Books, 2019, Chapters 4 and 5.

Seminar presentation:

Metcalf J., Moss E., Boyd D. [Owning ethics: Corporate logics, Silicon Valley, and the institutionalization of ethics](#). *Social Research: An International Quarterly*, 82(2): 449-476.

5. *Bias and Inequality*

February 5, 2024

Critical commentary #1 due in class

Benjamin R. Assessing risk, automating racism. *Science*, 2019 (a response to Obermeyer et al): <https://science.sciencemag.org/content/366/6464/421/tab-article-info>

Braun, Lundy. “Race Correction and Spirometry: Why History Matters.” *Chest* 159, no. 4 (2020): 1670–75. doi:10.1016/j.chest.2020.10.046.

Browne, Simone. “Digital Epidermalization: Race, Identity and Biometrics.” *Critical Sociology* 36.1 (2010): 131–150.

Glabau, Danya. 2020. The Dark Matter of Digital Health. *Public Books*. <https://www.publicbooks.org/staff-picks-2020-the-dark-matter-of-digital-health/>

Moran-Thomas, Amy. “How a Popular Medical Device Encodes Racial Bias,” *Boston Review*, 5 August 2020, <https://bostonreview.net/articles/amy-moran-thomas-pulse-oximeter/>

Obermeyer, Ziad et al. “Dissecting Racial Bias in an Algorithm Used to Manage the Health of Populations.” *Science* 366.6464 (2019): 447–453

Seminar presentation:

Emily M. Bender, Timnit Gebru, Angelina McMillan-Major, and Shmargaret Shmitchell. 2021. On the Dangers of Stochastic Parrots: Can Language Models Be Too Big? 🐦. In *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency (FAccT '21)*. Association for Computing Machinery, New York, NY, USA, 610–623. <https://doi.org/10.1145/3442188.3445922>

6. Data

February 12, 2024

Aitken, Mhairi et al. “Consensus Statement on Public Involvement and Engagement with Data-Intensive Health Research.” *International Journal of Population Data Science* 4.1 (2019): 1–6.

Benjamin, R. 2016. Informed refusal: Toward justice-based bioethics. *Science, Technology, and Human Values* 41(6):967–990.

Dixon-Woods M, Carter P, Laurie GT. The social licence for research: why care.data ran into trouble. *Journal of Medical Ethics* 2015; 41(5): 404-409.

IC/ES: Read “Frequently Asked Questions” and skim 2021-2022 annual report via <https://www.ices.on.ca/>

Paprica, P Alison, Magda Nunes de Melo, and Michael J Schull. “Social Licence and the General Public's Attitudes Toward Research Based on Linked Administrative Health Data: A Qualitative Study.” *CMAJ Open* 7.1 (2019): E40–E46.

Stinson, Catherine. *Healthy Data: Policy Solutions for Big Data and AI Innovation in Health*. Mowat Centre, University of Toronto, 2018.

Topol, Eric. *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. New York: Basic Books, 2019, Chapters 6 and 7.

Seminar presentation:

Allen J, Adams C, Flack F. The role of data custodians in establishing and maintaining social license for health research. *Bioethics* 2019 (18 Jan).

Reading Week – No Class
February 19, 2024

7. *Genomics and Personalized Medicine*
February 26, 2024

Kahn, Jonathan et al. “How Not to Talk About Race and Genetics.” *Buzzfeed News*, 30 March 2018, <https://www.buzzfeednews.com/article/bfopinion/race-genetics-david-reich>

Skloot, Rebecca. *The Immortal Life of Henrietta Lacks*. New York: Broadway Books, 2011.

Topol, Eric. *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. New York: Basic Books, 2019, Chapter 10.

Seminar presentation:

Ferryman, Kadija, and Mikaela Pitcan. *Fairness in Precision Medicine*. Data & Society Research Institute, 2018.

8. *Diagnosis & Treatment*
March 4, 2024

Critical commentary #2 due in class

Agassi, Joseph, and Nathaniel Laor. “The Computer as a Diagnostic Tool in Medicine.” *Technology in Society* 6 (1984): 235–239.

Beede, Emma, Elizabeth Baylor, Fred Hersch, Anna Iurchenko, Lauren Wilcox, Paisan Ruamviboonsuk, and Laura M Vardoulakis. 2020. “A Human-Centered Evaluation of a Deep Learning System Deployed in Clinics for the Detection of Diabetic Retinopathy.” In *Proceedings of CHI 2020*:1–12. New York, NY, USA: ACM. doi:10.1145/3313831.3376718.

SepsisWatch Background Information (look at 1-pager): <https://dih.org/project/sepsiswatch/>

Elish, M.C. and Elizabeth Anne Watkins. *Repairing Innovation: A Study of Integrating AI in Clinical Care*. Data & Society Research Institute, 2020.

Sendak, Mark, Will Ratliff, D Sarro, E Alderton, J Futoma, Michael Gao, Marshall Nichols, et al. “Real-World Integration of a Sepsis Deep Learning Technology Into Routine Clinical Care: Implementation Study.” *Journal of Medical Internet Research: Medical Informatics*, July 15, 2020. <https://doi.org/10.2196/15182>

Topol, Eric. *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. New York: Basic Books, 2019, Chapter 9.

Seminar presentations:

Wadmann S, Hoeyer K. Dangers of the digital fit: Rethinking seamlessness and social sustainability in data-intensive healthcare. *Big Data & Society* 2018 (Jan-Jun): 1-13.

9. *Mental Health and Wellness*
March 11, 2024

Rose, Nikolas. "Calculable Minds and Manageable Individuals." *History of the Human Sciences* 1.2 (1988): 179–200.

Schüll, Natasha Dow. 2016. "Data for Life: Wearable Technology and the Design of Self-Care." *BioSocieties* 11 (3). Nature Publishing Group: 1–17. doi:10.1057/biosoc.2015.47.

Semel BM. Listening Like a Computer: Attentional Tensions and Mechanized Care in Psychiatric Digital Phenotyping. *Science, Technology, & Human Values*. 2022;47(2):266-290.

Topol, Eric. *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. New York: Basic Books, 2019, Chapters 8 and 11.

Seminar presentations:

Oravec, Jo Ann (2020) Digital iatrogenesis and workplace marginalization: some ethical issues involving self-tracking medical technologies, *Information, Communication & Society*, 23:14, 2030-2046.

10. Epidemiology & Public Health [class will be on Zoom]

March 18, 2024

Greta R Bauer and Daniel Lizotte, "Artificial Intelligence, Intersectionality, and the Future of Public Health" <https://pubmed.ncbi.nlm.nih.gov/33326280/>

Haque, Albert, Arnold Milstein, and Li Fei-Fei. 2020. "Illuminating the Dark Spaces of Healthcare with Ambient Intelligence." *Nature*, August. Springer US, 1–10. doi:10.1038/s41586-020-2669-y.

Holzmeier C. (2021). Beyond 'AI for Social Good' (AI4SG): social transformations—not tech-fixes—for health equity. *Interdisciplinary Science Reviews*: 46.

Seminar presentation:

Fairchild AL, Gable L, Gostin LO, Bayer R, Sweeney P, Janssen RS. Public goods, private data: HIV and the history, ethics, and uses of identifiable public health information. *Public Health Rep*. 2007;122 Suppl 1(Suppl 1):7-15. doi: 10.1177/00333549071220S103.

11. Summative Group Project Work Period -- No Class

March 25, 2024

12. Easter Monday – No Class

April 1, 2024

13. Futures

April 8, 2024

Group research presentation due in class

Methods of Evaluation

There are no late penalties for this course; however, I am constrained by final mark submission deadlines set by the university. **The final date to withdraw from this course is March 8, 2024.**

Much of your evaluation in this class consists of group work. I will assign you to a group of 3-4 students at the beginning of the semester. This will be your group both for your in-class group presentation and for your summative group assignment.

Collegiality & Engagement: 20%

You will be evaluated on your qualitative contributions to course discussions. Please remember that some people may feel less comfortable speaking up in class, while some feel more comfortable. That said, students should participate as much as possible in all sessions, and designated readings for each week should be completed before class. Your grade for class participation will be assessed of your participation during the seminar presentations of your peers, small group discussions, participation in our ongoing discussion about HIS as a discipline, evidence of your general preparation for class, including familiarity with required readings, contributions to discussions, and demonstration of respect for the ideas and feelings of others.

As part of this portion of your grade, you will complete a weekly “exit ticket” through which you can ask further questions about the material and provide other feedback to me. This exit ticket will be accessible via OWL. It should be completed for every class you attend and is a critical component of your engagement grade. The exit ticket will also present a space to post links to notable news articles you’ve seen over the past week dealing with topics related to the class. At the beginning of each class session, we will discuss some of these articles together as a warm-up exercise.

Group Seminar Presentation & Facilitation: 20%

Once a term, your group will be responsible for a 20-minute presentation of one of the week’s readings marked as “group presentations.” In that presentation, your group should present the piece’s main arguments, explain its broader scholarly context, and connect its contribution to contemporary debates both academic and public. Your group will also facilitate class discussion by formulating three to four discussion questions for the class. A sign-up list will be available at the beginning of the semester.

Critical Commentaries: 20% (10% each, due weeks 5 and 8)

Students will submit three brief individual reports on a topic related to the course, in which a course reading is linked to current events. Each report will be based on a reading from the reading list (or a related reading, with permission of the instructor), discussed in the context of a recent (within the past year) journal, newspaper, magazine or blog article relating to the course reading and selected by the student. Topics should be related to those covered in the preceding weeks of class. This exercise aims to help you develop the skills needed to communicate complex ideas clearly and in plain language for diverse audiences.

Commentaries should be between 800-1000 words, including an overview and synthesis of the two sources, plus the requirements outlined below. Please make sure to include a reference list (not included in the word limit). This is an exercise in writing concisely and with insight about theory, research and/or practice. Assignments that merely summarize the readings are not appropriate – you need to provide some critical synthesis. Avoid burying yourself in details: reflect on what you have read, note down the important points you want to make, and proof-read and revise your writing to keep the piece concise. Include the following elements when writing your commentaries:

- What is the overall theme and what are the key ideas in the articles? There will often be many possible themes and key ideas. For you, from your perspective, what stands out as significant?
- Identify, where possible, the type of sources used by the author(s). For example, for a journal article, the author might have searched previous literature and/or conducted original research using study subjects; a journalist might have conducted interviews or commented on a major report that has been released.
- Why did you select these two readings – what brings them together, conceptually? Which arguments and what analysis on the key ideas did you find fit in most with your own ideas? Why? Did you disagree with any of the ideas presented? Why?

In the class in which each commentary is due, each student will be asked to very briefly describe their topic and *answer specifically* the following two questions:

- How does the topic relate to the course content so far?

- What motivated you to choose this topic? What activated you about it?

You will have three minutes (with a hard stop!) to present this material, so think carefully about what you want to say.

Commentaries will be graded on the appropriateness of the articles selected, the clarity and concision of your analysis, and evidence that you've thought about the issue deeply and selected key messages that have relevance to each other. You will lose marks if sources are not identified or cited properly, if no critical synthesis or relevance is provided, or if reports exceed the word limit.

Summative Group Assignment (details TBD): 40%

Collegiality, Course Conduct, and Self-Care

Your goal in this course should be full attendance, attention, participation, listening and reading all of the required texts. That said, such goals are always aspirational. Do your best, but don't beat yourself up when (as we all do) it feels to you as if you come up short.

Disagreements are expected, but while arguments are not contests, they often have high stakes (sometimes invisible to you, but highly compelling to others – see the EDI principles below). Personal attacks, bullying, or intimidation is not acceptable under any circumstance. Please keep nitpicking to a minimum; all questions, whether basic or advanced, are valuable. Remember, you are free to change your mind at any time—as are others.

Do not engage in “seek and destroy” criticism of others’ ideas, or of ideas in the readings. Critique is a powerful tool and does damage. If you have something critical to say about a reading, please be ready to explain how the piece could be improved; if you disagree with the premise of a piece, read to understand what motivates the argument — without knowing your adversary, how can you defeat it? And please remember that some people may feel less comfortable speaking up in class, while some feel more comfortable.

The testimony of personal experience is a necessary and often valuable part of our intellectual grounding and trajectory. However, like critique, testimony is also a powerful tool that can cut both ways. Please be thoughtful about mobilizing personal experience in class. Ask yourself if the testimony is relevant, and safe for you to share; ask yourself too if you are prepared to seriously consider others’ interpretations of your experience if they differ from your own? Anecdotes are different kinds of evidence that systematically collected scholarly data, and useful (or harmful) in different ways.

Finally, in this course, I'd like you to strive to embody Western's equity, diversity and inclusion (EDI) principles. Western University's institutional commitment to equity, diversity and inclusion (EDI) supports the University's mandate as a research-intensive institution of higher learning, an employer of choice and a community leader. The University is enriched by the diversity of our campus community and strengthened by our shared commitment to equity and inclusion. Black Lives Matter, as do the lives and experiences of Indigenous peoples, other visible minorities, and all underrepresented and equity-seeking groups*.

Your conduct in this course should be guided by the principles below:

Equity – We value equity of access and opportunity for members of underrepresented and equity-seeking groups*. We take action to identify and address barriers to the full participation of members of these groups at the University.

Diversity – We value and respect the diversity of our campus community. We recognize the important contributions that diverse perspectives and lived experiences bring to Western's learning, teaching, working and research environments.

Inclusion – We value inclusion and active engagement with and across diverse communities in all aspects of university life. We foster a welcoming campus community where everyone feels respected, valued and included.

**Members of underrepresented or equity-seeking groups includes, but may not be limited to, women, Indigenous peoples (First Nations, Inuit and Métis), persons with disabilities, members of racialized groups and members of LGBTQ2+ communities. In recognition that all individuals have multiple aspects of identity, an intersectional lens will also be used when assessing barriers and/or developing policies/programs at the University.*

For more information on Western’s policies around academic integrity, including plagiarism, please visit <https://teaching.uwo.ca/teaching/assessing/academic-integrity.html>

Health/Wellness Services

Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help. I am happy to help facilitate these contacts if desired

Accessible Education Western (AEW)

Western is committed to achieving barrier-free accessibility for all its members, including graduate students. As part of this commitment, Western provides a variety of services devoted to promoting, advocating, and accommodating persons with disabilities in their respective graduate program.

Graduate students with disabilities (for example, chronic illnesses, mental health conditions, mobility impairments) are strongly encouraged to register with Accessible Education Western (AEW), a confidential service designed to support graduate and undergraduate students through their academic program. With the appropriate documentation, the student will work with both AEW and their graduate programs (normally their Graduate Chair and/or Course instructor) to ensure that appropriate academic accommodations to program requirements are arranged. These accommodations include individual counselling, alternative formatted literature, accessible campus transportation, learning strategy instruction, writing exams and assistive technology instruction.

Statement on Academic Offences and Generative AI

Scholastic offences are taken seriously, and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf. For further information on Western’s policies around academic integrity, including plagiarism, please visit <https://teaching.uwo.ca/teaching/assessing/academic-integrity.html>

In this course, you will be evaluated in large part on the quality of your written arguments. As such, the use of AI content generators (such as ChatGPT) to complete assignments is not allowed in this course. Remember that plagiarism includes, but is not limited to, the unauthorized use of generative artificial intelligence to create content that is submitted as one's own. However, I am aware it is extremely easy to use such AI content generators without detection. I am therefore trusting you to abide by this rule by the honor system—in return for my full attention and engagement with your work, I ask that you submit yourself to the often-frustrating process of writing from scratch.

Covid Contingency Statement

In the event of a COVID-19 resurgence, or other health emergency, during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g.,

posted on OWL for students to view at their convenience). The grading scheme will not change. Any remaining assessments will also be conducted online as determined by the course instructor.

If university policy and public health directives necessitate additional measures to manage the spread of disease, students may be required to resume masking in instructional spaces. Students who are unable to wear a mask for medical reasons should seek accommodation through Accessible Education

Land Acknowledgment

We acknowledge that Western University is located on the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Chonnonton Nations, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum.

In doing so, we respect the longstanding relationships that Indigenous Nations have to this land, as they are the original caretakers. We acknowledge historical and ongoing injustices that Indigenous Peoples (First Nations, Métis and Inuit) endure in Canada, and we accept responsibility as a public institution to contribute toward revealing and correcting miseducation as well as renewing respectful relationships with Indigenous communities through our teaching, research and community service.

For more information about the purpose and significance of land acknowledgments, please visit <https://indigenous.uwo.ca/initiatives/land-acknowledgement.html>.

Syllabus Credits

This syllabus is grounded in part on materials developed by Drs. Nadine Wathen, Anita Kothari, and Eugenia Canas of Western University, Gabriella Coleman of McGill University, Jonathan Sterne of McGill University, Anna Lauren Hoffmann of the University of Washington, and Jay Shaw and Ross Upshur of the University of Toronto.