



We acknowledge that we are on the traditional, ancestral and unceded territory of the hə́ŋqəmiḥə́m speaking Musqueam people.

iSchool Mission: Through innovative research, education and design, our mission is to enhance humanity's capacity to engage information in effective, creative and diverse ways.

INFO 303 (3) Search Engines and Society

Program:	BA Minor in Informatics
Year:	
Course Schedule:	
Location:	
Instructor:	
Office location:	iSchool Adjunct Office
Office phone:	
Office hours:	
E-mail address:	
Learning Management Site:	http://lthub.ubc.ca/guides/canvas/

Course Overview: Everyday, Google handles billions of searches. Technically, how do search engines organize the web to make even obscure information findable? How do search results mirror and shape our everyday decisions, our lives and patterns of social behaviour? This course provides an introductory review of the science of search engines, including how search engines discover webpages, analyze their content, and index and rank webpages in response to a user query. Building on this foundation, the course then examines the many profound and fascinating implications of this technology. We will explore the opportunities and the sociotechnical and ethical concerns that arise from the massive and global scale deployment of search technologies by companies such as Google, Microsoft, Baidu, and Yandex. Specific topics, including algorithmic bias, censorship, misinformation, privacy, and gatekeeping are covered.

Learning Outcomes:

Upon completion of this course students will be able to:

- LO1 Use search engine technologies effectively to collect and analyze digital information and data for a range of purposes in their own lives;
- LO2 Explain how search engines work, including the design of technical components that collect, process, rank and recommend web content; .
- LO3 Research and critique search engine technologies with respect to their ethical and social impact;
- LO4 Analyze complex issues such as algorithmic bias, censorship, misinformation, privacy, and gatekeeping in relation to the historic, economic, and technical context of search engines.



Course Topics:

- History of search engines
- Technical components of search engines
 - Crawling / text acquisition
 - Indexing / text processing
 - Ranking and Recommendation
- Sociotechnical and ethical issues of search engines
 - Ethical theory and critiques of search engines
 - Search engine economic models and issues, including ad economy; antitrust; and copyright
 - Search engine bias and misinformation
 - Gate keeping
 - Privacy and surveillance capitalism
- Living with search engines
 - Search behaviour and use of search engines.
 - Search engine regulation
 - Alternative search engines to Google

Recommended: INFO 200

Format of the course: The class of 50-60 students will meet twice per week (T/Th). Each week the first class will take the form of an interactive lecture to introduce the core concepts and the topic of the week. The second class each week will include a shorter lecture and conclude with a workshop in which students will work in small groups to investigate a problem related to the week's theme. In some cases, these will involve working with online search tools (e.g. Google Translate) and in some cases they will take the form of a guided discussion. Over the term, 5 of these workshops will lead to submitted and graded Internet Lab assignments. The course TA will assist with these sessions.

Required and Recommended Reading: Required and recommended readings will be assigned throughout the term. These will be available in electronic format from the UBC Library or other online sources.

Required:

The primary text for the course is:

Halavais, A. (2018) *Search Engine Society*, 2nd ed. Digital Media and Society Series. Polity Press.

Additional required readings:

Brunton, F. and Nissenbaum, H. (n.d.) *The Fantasy of Opting Out*. The MIT Press Reader.

<https://thereader.mitpress.mit.edu/the-fantasy-of-opting-out/>

Carr, N. (January, 2019). *Thieves of experience: How Google and Facebook Corrupted Capitalism*. Los Angeles Review of Books. <https://lareviewofbooks.org/article/thieves-of-experience-how-google-and-facebook-corrupted-capitalism>

Croft, B., Metzler, D., & Strohman, T. (2010). *Search engines: Information retrieval in practice* (Chap. 2, pp. 13–30, Chap. 3, pp. 31–63). Boston, MA: Addison-Wesley.

Diaz, A. (2008). *Through the Google Goggles: Sociopolitical Bias in Search Engine Design*. In A. Spink & M. Zimmer (Eds.), *Web Search: Multidisciplinary Perspectives* (pp. 11–34). Springer. https://doi.org/10.1007/978-3-540-75829-7_2

Friedman, B., & Nissenbaum, H. (1996). *Bias in computer systems*. *ACM Transactions on Information Systems*, 14(3), 330–347. <https://doi.org/10.1145/230538.230561>

Fuchs, C. (2019). *A Contribution to the Critique of the Political Economy of Google*. *Fast Capitalism*, 8(1), Article 1. <https://doi.org/10.32855/fcapital.201101.006>



Granka, L. A. (2010). The Politics of Search: A Decade Retrospective. *The Information Society*, 26(5), 364–374. <https://doi.org/10.1080/01972243.2010.511560>

Haider, J. and Sundin, O. (2019) *Invisible Search and Online Search Engines: the Ubiquity of Search in Everyday Life*. (Chap. 4, p 76-99). Routledge.

Huvila, I. (2016). Affective capitalism of knowing and the society of search engine, *Aslib Journal of Information Management*, 68:5, pp. 566-588. <https://doi-org.ezproxy.library.ubc.ca/10.1108/AJIM-11-2015-0178>.

Introna, L., & Nissenbaum, H. (2000). Defining the Web: The politics of search engines. *Computer*, 33(1), 54–62.

Levy, S. (February, 2010). How Google's Algorithm Rules the Web. *Wired*. https://www.wired.com/2010/02/ff_google_algorithm/

Newton, C. (December, 2019). The Terror Queue. *The Verge*. <https://www.theverge.com/2019/12/16/21021005/google-youtube-moderators-ptsd-accenture-violent-disturbing-content-interviews-video>

Noble, S. (2018) *Algorithms of Oppression: How Search Engines Reinforce Racism*. (Chap. 1, 15-63.) NYU Press.

Piepenbring, D. (July, 2017). The Heretical Things Statistics Tell Us About Fiction. *The New Yorker*. <https://www.newyorker.com/books/page-turner/the-surprising-things-statistics-tell-us-about-fiction>

Rieder, B. (2012). What is in PageRank? A Historical and Conceptual Investigation of a Recursive Status Index. *Computational Culture* (2). http://computationalculture.net/what_is_in_pagerank/.

Scheiber, N. and Conger, K. (February, 2020). The Great Google Revolt. *The New York Times Magazine*. <https://www.nytimes.com/interactive/2020/02/18/magazine/google-revolt.html>

Segal, D. (February, 2011). The Dirty Little Secrets of Search. *The New York Times*. <https://www.nytimes.com/2011/02/13/business/13search.html>

Smucker, M. D. (2013). Information representation. In I. Ruthven & D. Kelly (Eds.), *Interactive Information Seeking, Behaviour and Retrieval* (1st ed., pp. 77–94). Facet. <https://doi.org/10.29085/9781856049740.007>

Somers, J. (April, 2017). Torching the Modern-Day Library of Alexandria. *The Atlantic*. <https://www.theatlantic.com/technology/archive/2017/04/the-tragedy-of-google-books/523320/>

Ugwu, R. (July, 2016). Inside The Playlist Factory. *BuzzFeed*. <https://www.buzzfeed.com/reggieugwu/the-unsung-heroes-of-the-music-streaming-boom>

Vaidhyanathan, S. (May, 2011). Can Google Do No Evil? *The Chronicle of Higher Education*. <https://www.chronicle.com/article/Can-Google-Do-No-Evil-/127274>

Ziewitz, M. (2016). Governing Algorithms: Myth, Mess, and Methods. *Science, Technology, & Human Values*, 41(1), 3–16. <https://doi.org/10.1177/0162243915608948>

Course Assignments and Assessment

Assignment Name	Due Date	Weight	Learning Outcomes
Participation	Throughout	10%	LO2, LO3, LO4
Self-reflection Diary	Week 3	15%	LO1, LO2
Group Internet Labs (5 in total)	Throughout	25%	LO1, LO2, LO3, LO4
Midterm Test: Technical components of search engines	Week 5	25%	LO2
Term Paper Proposal	Week 8	5%	---
Term Paper	End of term	25%	LO3, LO4

Participation – 10%



Students' participation will be assessed based on the quality of their contributions to the class discussions, attendance and online posts in the canvas site (1/week). Students are expected to be prepared to discuss readings, share their ideas with other students and ask questions in a manner that demonstrates mutual respect and willingness to listen to and learn from a range of perspectives. Course readings will be essential to gain an understanding of how search engines work (LO2); develop a critical perspective on the role of these technologies in society (LO3); and to develop knowledge of the complex social, ethical and legal issues covered in the course (LO4).

The participation grade will be based on the following criteria:

- Attendance – this will be recorded for each class
- Contributions to question-and-answer sessions following lectures that demonstrate familiarity with one or more of the course readings, as recorded by the instructor;
- Weekly individual posts to a canvas discussion board referencing one or more salient question/s or issue/s identified in the readings for the week. A total of 10 posts are expected, due prior to the first class of each week. Posts are expected to be brief (<150 words); to demonstrate understanding of the material; and to be relevant to the course content.

Self Reflection Diary – 15%

Through a week-long digital diary, students will reflect on the role of search engines in their everyday lives (LO1). In their diaries, students will focus on their motivations for using search engines. Students will record and reflect upon 4-5 instances of searching engine use, framed by a series of questions, including: what motivated them to search for information; what device and interaction modality was used; how long their search took; how and why they chose from the results. Students will be asked to recreate their searches using an alternate search engine (not Google) and to compare their results and experiences. The diary will be prepared using a standard template and a total of 5 pages in length. The assignment is intended to prime students for the topics covered in the course by asking them to reflect on their own experiences with search and their search skills (LO1), and on how search engines function (LO2).

Group Internet Labs (25% - 5 labs at 5% each)

Students will work on set problems in assigned lab groups of 3-4 students and submit a structured lab-style report of 1-2 pages in length. The lab work is designed for students to make use of search tools to to strengthen their own skills in using search-based tools (LO1) and their understanding of how search engines work (LO2); to develop critical skills based on direct interaction with search technologies (LO3); and to delve deeper into weekly topics (LO4). Each lab will be carried out during class time as part of the workshop time allocated each week. Students groups will be encouraged to discuss the ethical and privacy issues associated with the tools used and with reference to their own accounts and data. Students will have the choice to opt out of sharing personal data for purposes of the labs and test accounts and/or Google verbatim (non-personalized search) will be available for use in this case. A group lab report will be required at the end of the week it is assigned. Example lab topics and tasks include:

- 1) What is the impact of personalization of search results? For a set of queries, compare Google search results obtained by group members and or test accounts. Hypothesize on the source of those differences.
- 2) What can we learn by tracking search queries? Use Google Trends to compare the frequency of a set of terms or concepts over time and across different regions.



- 3) How does Google reflect and reinforce social biases? Use Google image search or Google autocomplete with personal or generic accounts to analyze potential bias in search results or query suggestions for specified topics.
- 4) What does Google know about us? Examine the data stored in your Google account individually. Discuss as a group what types of data you found that you think should or should not be included, and identify one or more ways that you can gain control over what data is stored by Google.

MidTerm Test 25%

An in-class test will take place in week 5 to assess students' understanding of the technical components of search engines (LO2). The test will include multiple choice and short answer, mostly definitional, questions covering class material and readings from weeks 1-4. A review session will be held in the first class session in Week 5, and the test will take place in the second class of that week.

Term Paper 25% + 5% for Proposal

Students will work independently to write a paper of approximately 2000 words that addresses a topic relevant to the themes covered in the second half of the course (e.g., algorithmic bias, censorship, economic models, privacy, and gatekeeping). The paper is intended as an opportunity for students to analyze and critique the social and ethical impacts of search engines (LO3) in the content of one or more related issue (LO4). Papers should draw upon a combination of peer reviewed research papers and contemporary media reports to identify the technical, ethical and social dimensions of their topic and to map out alternate approaches or solutions to the issue. Students may choose to focus on a particular type of search system, such as conversational search, image search, Google book search; or to focus on a particular context (e.g. the European Union), or domain (e.g. health; e-commerce).

A list of suggested topics will be provided, but students will have the opportunity to propose their own topics of interest.

Term papers will be evaluated on the following criteria:

- Research (8%): selection and use of sources
- Analysis and argument (10%); evidence of understanding, synthesis and critical analysis of source material
- Creativity and insight (2%) with respect to the analysis and conclusions
- Writing (5%): organization, grammar, clarity

A 250 word proposal will be due in Week 7. The proposal should outline the chosen topic, research question or thesis and identify at least 3 sources for the paper.

Course Schedule:

Week	Topic and Readings	Assignments
WK 1	<p>Introduction and History of Search Engines</p> <p>Required Readings: Halavais, Chap. 1, The Engines, p 6-39.</p> <p>Granka, L. A. (2010). The Politics of Search: A Decade Retrospective. The Information Society, 26(5), 364–374. https://doi.org/10.1080/01972243.2010.511560</p>	



	Introna, L., & Nissenbaum, H. (2000). Defining the Web: The politics of search engines. <i>Computer</i> , 33(1), 54–62.	
WK 2	<p>Crawling / text acquisition</p> <ul style="list-style-type: none"> • Document markup languages (e.g., HTML and CSS) • Spam • Multimedia (e.g., Google Images and YouTube) <p>Required Readings: Croft, B., Metzler, D., & Strohman, T. (2010). Architecture of a search engine. In <i>Search engines: Information retrieval in practice</i> (Chap. 2, pp. 13–30 and Chap 3, pp.31-63). Boston, MA: Addison-Wesley.</p>	
WK 3	<p>Indexing / text processing</p> <ul style="list-style-type: none"> • Tokenizing • Stopping • Stemming • Phrases and n-grams (see also Google Ngram Viewer) • Multimedia <p>Media: Computerphile. (August, 2015). How Search Engines Treat Data [Video]. YouTube. https://www.youtube.com/watch?v=vrjAIBgxm_w</p> <p>Required Readings: Piepenbring, D. (July, 2017). The Heretical Things Statistics Tell Us About Fiction. <i>The New Yorker</i>. https://www.newyorker.com/books/page-turner/the-surprising-things-statistics-tell-us-about-fiction</p> <p>Smucker, M. D. (2013). Information representation. In I. Ruthven & D. Kelly (Eds.), <i>Interactive Information Seeking, Behaviour and Retrieval</i> (1st ed., pp. 77–94). Facet. https://doi.org/10.29085/9781856049740.007</p>	Self-Reflection Diary 15%
WK 4	<p>Ranking & Recommendation</p> <ul style="list-style-type: none"> • Linguistic cues • PageRank cues • User cues (i.e., clickthrough data) • Relevance • Personalization and Recommendation • Machine Learning and AI approaches <p>Media: Computerphile. (September, 2015). Page Ranking and Search Engines [Video]. YouTube. https://www.youtube.com/watch?v=v7n7wZhHj8</p>	



	<p>Computerphile. (December, 2015). Search Engine Relevance [Video]. YouTube. https://www.youtube.com/watch?v= 0Z8aGwjLYo</p> <p>Required Readings: Rieder, B. (2012). What is in PageRank? A Historical and Conceptual Investigation of a Recursive Status Index. Computational Culture (2). http://computationalculture.net/what_is_in_pagerank/.</p> <p>Segal, D. (February, 2011). The Dirty Little Secrets of Search. The New York Times. https://www.nytimes.com/2011/02/13/business/13search.html</p> <p>Ugwu, R. (July, 2016). Inside The Playlist Factory. BuzzFeed. https://www.buzzfeed.com/reggieugwu/the-unsung-heroes-of-the-music-streaming-boom</p>	
WK 5	<p>Review of Search Engine Technology</p> <p>No new readings</p>	Midterm Test – 25%
WK 6	<p>How we Search: Search Skills and Digital Literacy</p> <ul style="list-style-type: none"> • Why we search: tasks and everyday life information needs • Patterns of search behaviour • Digital literacy and search skills • Search user interface design <p>Required Readings: Halavais, Chap. 2. Searching, p. 40-72 and Chap 3. Sociable Search, p. 73-82.</p> <p>Haider, J. and Sundin, O. (2019) Invisible Search and Online Search Engines: the Ubiquity of Search in Everyday Life. (Chap. 4, Search in Everyday Life, p 76-99). Routledge.</p>	
WK 7	<p>Ethics and Economics of Search Engines</p> <ul style="list-style-type: none"> • Ethical theory and critiques of search engines • Advertising as a revenue model • Data capitalism • Google and antitrust actions <p>Media Oxford Internet Institute, University of Oxford. (June, 2012). Behind the White Curtain: Search Engine Economics [Video]. YouTube. https://www.youtube.com/watch?v=boPj_tCqZ_M</p> <p>Required Readings: Fuchs, C. (2019). A Contribution to the Critique of the Political Economy of Google. Fast Capitalism, 8(1), Article 1. https://doi.org/10.32855/fcapital.201101.006</p>	Internet Lab 1 due (5%)



	Hinman, L. M. (2005). <i>Esse est indicato in Google: Ethical and Political Issues in Search Engines</i> . 3, 7.	
WK 8	<p>Search engine bias and misinformation</p> <ul style="list-style-type: none"> • Representation of ethnicity, gender, religion, and sexuality • Algorithmic bias • Censorship (e.g., Google’s censored search engine for the Chinese market) <p>Media TED – Cathy O’Neil. (September, 2017). <i>The Era of Blind Faith in Big Data Must End</i> [Video]. YouTube. https://www.youtube.com/watch?v= 2u_eHHzRto</p> <p>Required Readings: Diaz, A. (2008). <i>Through the Google Goggles: Sociopolitical Bias in Search Engine Design</i>. In A. Spink & M. Zimmer (Eds.), <i>Web Search: Multidisciplinary Perspectives</i> (pp. 11–34). Springer. https://doi.org/10.1007/978-3-540-75829-7_2</p> <p>Friedman, B., & Nissenbaum, H. (1996). <i>Bias in computer systems</i>. <i>ACM Transactions on Information Systems</i>, 14(3), 330–347. https://doi.org/10.1145/230538.230561</p> <p>Noble, S. (2018) <i>Algorithms of Oppression: How Search Engines Reinforce Racism</i>. (Chap. 1, 15-63.) NYU Press.</p>	Research Paper Proposal Due (5%)
Wk 9	<p>Gate Keeping and Knowledge Mediation</p> <ul style="list-style-type: none"> • Knowledge mediation via search engines • How Google influences information behaviour; the Google Effect on memory • Filter bubbles and knowledge localization <p>Media Labbe, C. (Producer). (2020, February 11). <i>Good Code</i> [Audio podcast]. https://www.dli.tech.cornell.edu/goodcode/episode/1ea86721/jake-goldenfein-on-google-scholar</p> <p>Required Readings: Halavais, Chap. 5. <i>Knowledge and Democracy</i>, p. 133-170.</p> <p>Hinman, L. M. (2008). <i>Searching Ethics: The Role of Search Engines in the Construction and Distribution of Knowledge</i>. In A. Spink & M. Zimmer</p>	Internet Lab 2 (5%)



	<p>(Eds.), Web Search: Multidisciplinary Perspectives (pp. 67–76). Springer. https://doi.org/10.1007/978-3-540-75829-7_5</p> <p>Newton, C. (December, 2019). The Terror Queue. The Verge. https://www.theverge.com/2019/12/16/21021005/google-youtube-moderators-ptsd-accenture-violent-disturbing-content-interviews-video</p>	
WK 10	<p>Surveillance and Privacy</p> <ul style="list-style-type: none"> Personalization and data collection Right to Be Forgotten / Right to Erasure <p>Required Readings: Halavais, Chap. 7. Privacy, p. 198-226. Carr, N. (January, 2019). Thieves of experience: How Google and Facebook Corrupted Capitalism. Los Angeles Review of Books. https://lareviewofbooks.org/article/thieves-of-experience-how-google-and-facebook-corrupted-capitalism</p> <p>Satariano, A. (2019) Google is fined \$57 Million under Europe’s data privacy law. New York Times. January 21, 2019. https://www.nytimes.com/2019/01/21/technology/google-europe-gdpr-fine.html</p>	Internet Lab 3 (5%)
WK11	<p>Search engine regulation</p> <ul style="list-style-type: none"> Content regulation in the international context Algorithmic governance Intellectual property issues <p>Required Readings: Halavais, Chap. 6. Control,171-197.</p> <p>Duhigg, C. (February, 2018). The Case Against Google. The New York Times Magazine. https://www.nytimes.com/2018/02/20/magazine/the-case-against-google.html</p> <p>Vaidhyanathan, S. (May, 2011). Can Google Do No Evil? The Chronicle of Higher Education. https://www.chronicle.com/article/Can-Google-Do-No-Evil-127274</p> <p>Ziewitz, M. (2016). Governing Algorithms: Myth, Mess, and Methods. Science, Technology, & Human Values, 41(1), 3–16. https://doi.org/10.1177/0162243915608948</p>	Internet Lab 4 (5%)
WK 12	<p>Alternatives to Google</p> <ul style="list-style-type: none"> Societal dependence upon search technologies Personal and societal responses Alternative tools 	Internet Lab 5 (5%)



	<p>Media Google Tech Talks. (March, 2008). No Time to Think [Video]. YouTube. https://www.youtube.com/watch?v=KHGcvj3JiGA</p> <p>Tools AdNauseam (https://adnauseam.io/) DuckDuckGo (https://duckduckgo.com/) Tor (https://www.torproject.org/) TrackMeNot (http://trackmenot.io/)</p> <p>Required Readings: Brunton, F. and Nissenbaum, H. (n.d.) The Fantasy of Opting Out. The MIT Press Reader. https://thereader.mitpress.mit.edu/the-fantasy-of-opting-out/</p> <p>Schofield, J. (December, 2019). Can DuckDuckGo Replace Google Search While Offering Better Privacy? The Guardian. https://www.theguardian.com/technology/askjack/2019/dec/12/duckduckgo-google-search-engine-privacy</p>	
WK 13	<p>Course Summary and Wrap Up</p> <p>Required Readings Halavais, Chap.8, Future Finding, p. 227-240.</p>	<p>Research Paper – End of Term</p>

Recommended and Additional Readings

Bozdag, E. (2013). Bias in algorithmic filtering and personalization. *Ethics and Information Technology*, 15(3), 209–227. <https://doi.org/10.1007/s10676-013-9321-6>

Bush, V. (July, 1945). As We May Think. *The Atlantic*.
<https://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/>

Cadwalladr, C. (Dec. 4, 2016). Google, democracy and the truth about Internet search. *The Guardian*.

Croft, B., Metzler, D., & Strohman, T. (2010). Processing text. In *Search engines: Information retrieval in practice* (Chap. 4, pp. 73–124). Boston, MA: Addison-Wesley.

Croft, B., Metzler, D., & Strohman, T. (2010). Search engines and information retrieval. In *Search engines: Information retrieval in practice* (Chap. 1, pp. 1–12). Boston, MA: Addison-Wesley.

Downey, T. (March, 2010). China's Cyberposse. *The New York Times Magazine*.
<https://www.nytimes.com/2010/03/07/magazine/07Human-t.html>

Duhigg, C. (February, 2018). The Case Against Google. *The New York Times Magazine*.
<https://www.nytimes.com/2018/02/20/magazine/the-case-against-google.html>

Eckersley, P., Schoen, S., Bankston, K., and Slater, D. (September, 2006). Six Tips to Protect Your Search Privacy. Electronic Frontier Foundation. <https://www EFF.org/wp/six-tips-protect-your-search-privacy>

Elgesem, D. (2008). Search engines and the public use of reason. *Ethics and Information Technology*, 10(4), 233–242. <https://doi.org/10.1007/s10676-008-9177-3>

Ferguson, C. (September, 2017). Searching for Help. *The Verge*.

Friedman, B., & Nissenbaum, H. (1996). Bias in computer systems. *ACM Transactions on Information Systems*, 14(3), 330–347. <https://doi.org/10.1145/230538.230561>

Friedman, B., Kahn, P. H., & Borning, A. (2009). Value Sensitive Design and Information Systems. In *The Handbook of Information and Computer Ethics* (pp. 69–101). John Wiley & Sons, Ltd.
<https://doi.org/10.1002/9780470281819.ch4>



- Goldfarb, A. (2014). What is Different About Online Advertising? *Review of Industrial Organization*, 44(2), 115–129. <https://doi.org/10.1007/s11151-013-9399-3>
- Goldman, E. (2008). Search Engine Bias and the Demise of Search Engine Utopianism. In A. Spink & M. Zimmer (Eds.), *Web Search: Multidisciplinary Perspectives* (pp. 121–133). Springer. https://doi.org/10.1007/978-3-540-75829-7_8
- Heffernan, V. (December, 2010). Granting Anonymity. *The New York Times Magazine*. <https://www.nytimes.com/2010/12/19/magazine/19FOB-Medium-t.html>
- Helmond, A. (2013) The Algorithmization of the Hyperlink. *Computational Culture* (3). <http://computationalculture.net/the-algorithmization-of-the-hyperlink/>
- Hinman, L. M. (2005). Esse est indicato in Google: Ethical and Political Issues in Search Engines. 3, 7.
- Hinman, L. M. (2008). Searching Ethics: The Role of Search Engines in the Construction and Distribution of Knowledge. In A. Spink & M. Zimmer (Eds.), *Web Search: Multidisciplinary Perspectives* (pp. 67–76). Springer. https://doi.org/10.1007/978-3-540-75829-7_5
- <https://www.theverge.com/2017/9/7/16257412/rehabs-near-me-google-search-scam-florida-treatment-centers>
- Introna, L., & Nissenbaum, H. (2000). Shaping the Web: Why the Politics of Search Engines Matters. *Information Society*, 16(3), 169–185. <https://doi.org/10.1080/01972240050133634>
- Jathan, S. (2019). When data is capital: Datafication, accumulation, and extraction. *Big Data & Society*; London, 6(1).
- Khatchadourian, R. (October, 2019). A Cybersecurity Firm's Sharp Rise and Stunning Collapse. *The New Yorker*. <https://www.newyorker.com/magazine/2019/11/04/a-cybersecurity-firms-sharp-rise-and-stunning-collapse>
- Knobel, C., & Bowker, G. C. (2011). Values in design. *Communications of the ACM*, 54(7), 26–28. <https://doi.org/10.1145/1965724.1965735>
- LaFrance, A. (December, 2016). Searching for Lost Knowledge in the Age of Intelligent Machines. *The Atlantic*. <https://www.theatlantic.com/technology/archive/2016/12/the-search-for-lost-knowledge/506879/>
- Levy, S. (February, 2010). How Google's Algorithm Rules the Web. *Wired*. https://www.wired.com/2010/02/ff_google_algorithm/
- Lewis-Kraus, G. (December, 2016). The Great A.I. Awakening. *The New York Times Magazine*. <https://www.nytimes.com/2016/12/14/magazine/the-great-ai-awakening.html>
- Little, S., Brown, E., & Rüter, S. (2013). Multimedia: Information representation and access. In I. Ruthven & D. Kelly (Eds.), *Interactive Information Seeking, Behaviour and Retrieval* (1st ed., pp. 235–254). Facet. <https://doi.org/10.29085/9781856049740.015>
- Mager, A. (2012). Algorithmic Ideology: How capitalist society shapes search engines. *Information, Communication & Society*, 15(5), 769–787. <https://doi.org/10.1080/1369118X.2012.676056>
- McCandlish, S. (April, 2002). EFF's Top 12 Ways to Protect Your Online Privacy. *Electronic Frontier Foundation*. <https://www.eff.org/wp/effs-top-12-ways-protect-your-online-privacy>
- Mittelstadt, B. D., Allo, P., Taddeo, M., Wachter, S., & Floridi, L. (2016). The ethics of algorithms: Mapping the debate. *Big Data & Society*, 3(2), 2053951716679679. <https://doi.org/10.1177/2053951716679679>
- Newman, L. H. (January, 2019). Tor Is Easier Than Ever: Time to Give It a Try. *Wired*. <https://www.wired.com/story/tor-anonymity-easier-than-ever/>
- Nichols, D. M., & Twidale, M. B. (2013). Recommendation, collaboration and social search. In I. Ruthven & D. Kelly (Eds.), *Interactive Information Seeking, Behaviour and Retrieval* (1st ed., pp. 205–220). Facet. <https://doi.org/10.29085/9781856049740.013>
- Pasquale, F. A. (2008). Internet Nondiscrimination Principles: Commercial Ethics for Carriers and Search Engines. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1134159>
- Pearson, J. (May, 2013). How a Career Con Man Led a Federal Sting That Cost Google \$500 Million. *Wired*. <https://www.wired.com/2013/05/google-pharma-whitaker-sting/>



- Petersen, C. (December, 2010). Google and Money! The New York Review of Books. <https://www.nybooks.com/articles/2010/12/09/google-and-money>
- Rieder, B., & Sire, G. (2014). Conflicts of interest and incentives to bias: A microeconomic critique of Google's tangled position on the Web. *New Media & Society*, 16(2), 195–211. <https://doi.org/10.1177/1461444813481195>
- Rohle, T. (2007). Desperately seeking the consumer: Personalized search engines and the commercial exploitation of user data. *First Monday*, 12(9). <https://doi.org/10.5210/fm.v12i9.2008>
- Saurwein, F., Just, N., & Latzer, M. (2015). Governance of algorithms: Options and limitations. *Info*, 17(6), 35–49. <https://doi.org/10.1108/info-05-2015-0025>
- Schofield, J. (December, 2019). Can DuckDuckGo Replace Google Search While Offering Better Privacy? *The Guardian*. <https://www.theguardian.com/technology/askjack/2019/dec/12/duckduckgo-google-search-engine-privacy>
- Segal, D. (February, 2011). The Dirty Little Secrets of Search. *The New York Times*. <https://www.nytimes.com/2011/02/13/business/13search.html>
- Somers, J. (April, 2017). Torching the Modern-Day Library of Alexandria. *The Atlantic*. <https://www.theatlantic.com/technology/archive/2017/04/the-tragedy-of-google-books/523320/>
- Specter, M. (May, 2000). The Race to Build a Better Search Engine: How Google took on its competition. *The New Yorker*. <https://www.newyorker.com/magazine/2000/05/29/search-and-deploy>
- Stone, B. and Silver, V. (August, 2015). Google's \$6 Billion Miscalculation on the EU. *Bloomberg Businessweek*. <https://www.bloomberg.com/news/features/2015-08-06/google-s-6-billion-miscalculation-on-the-eu>
- The World's Most Valuable Resource: Regulating the Data Economy. (2017, May 06). *The Economist*, 423, 9. Retrieved from <https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data>
- Tiku, N. (August, 2019). Three Years of Misery Inside Google, The Happiest Company in Tech. *Wired*. <https://www.wired.com/story/inside-google-three-years-misery-happiest-company-tech/>
- Van Couvering, E. (2008). The History of the Internet Search Engine: Navigational Media and the Traffic Commodity. In A. Spink & M. Zimmer (Eds.), *Web Search: Multidisciplinary Perspectives* (pp. 177–206). Springer. https://doi.org/10.1007/978-3-540-75829-7_11
- Weinberger, D. (May, 2016). Rethinking Knowledge in the Internet Age. *Los Angeles Review of Books*. <https://lareviewofbooks.org/article/rethinking-knowledge-internet-age/>
- Zimmer, M. (2008). The Gaze of the Perfect Search Engine: Google as an Infrastructure of Dataveillance. In A. Spink & M. Zimmer (Eds.), *Web Search: Multidisciplinary Perspectives* (pp. 77–99). Springer. https://doi.org/10.1007/978-3-540-75829-7_6
- Zimmer, M. (2008). The externalities of search 2.0: The emerging privacy threats when the drive for the perfect search engine meets Web 2.0 *First Monday*, 13(3). <https://doi.org/10.5210/fm.v13i3.2136>
- Zuboff, Shoshanna. (2019) *The Age of Surveillance Capitalism: the Fight for a Human Future at the New Frontier of Power*. Public Affairs: New York.

Attendance: Attendance is required in all class meetings. If you know you are going to be absent you must inform me beforehand if at all possible. Any penalties imposed for excessive absences are at the discretion of the instructor.

Evaluation: All assignments will be marked according to [UBC grading policy](#). Late assignments and requests for extensions should be negotiated with the instructor in advance of the assignment deadlines. The instructor will determine whether extensions are granted and late assignments are accepted with or without penalty on a case-by-case basis.

Required Materials: This course will rely on resources provided by the UBC Library or freely available on the Web. It is not anticipated that students will incur any costs for materials in this course.



Academic Concession: If you miss marked coursework (assignment, exam, presentation, participation in class) and are an Arts student, review the Faculty of Arts' [academic concession page](#) and then complete Arts Academic Advising's [online academic concession form](#), so that an advisor can evaluate your concession case. If you are a student in a different Faculty, please consult [your Faculty's webpage on academic concession](#), and then contact me where appropriate.

Policies and Resources to Support Student Success: UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious and cultural observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available here (<https://senate.ubc.ca/policies-resources-support-student-success>)

Academic Integrity: The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply when the matter is referred to the Office of the Dean. Careful records are kept in order to monitor and prevent recurrences. A more detailed description of academic integrity, including the University's policies and procedures, may be found in the [UBC Calendar: Student Conduct and Discipline](#).

Academic Accommodation for Students with Disabilities: Academic accommodations help students with a disability or ongoing medical condition overcome challenges that may affect their academic success. Students requiring academic accommodations must register with the [Centre for Accessibility](#) (previously known as Access & Diversity). The Centre will determine that student's eligibility for accommodations in accordance with [Policy LR7: Accommodation for Students with Disabilities \(Joint Senate and Board Policy\)](#). Academic accommodations are not determined by your instructors, and instructors should not ask you about the nature of your disability or ongoing medical condition, or request copies of your disability documentation. However, your instructor may consult with the Centre for Accessibility should the accommodations affect the essential learning outcomes of a course.