

AI Ain't Neutral: Teaching Critical AI Literacy with Information Literacy Concepts in an Honors FYE Course

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Abstract:

During the Fall 2025 semester, 18 students enrolled in a 3 credit First Year Experience (FYE) course for an Honors College titled “Exploring AI Literacy in the Research Process.” At Texas Tech university, this course was also cataloged as a Core Curriculum class for the Social and Behavioral Sciences. Additionally, the course was taught by a STEM Librarian who serves the Whitacre College of Engineering as liaison. This background in librarianship meant that the author aligned the course outcomes to the ACRL Framework, incorporating information literacy concepts related to the authority of certain contexts and constructs, the gathering and evaluating of information, scholarship as conversation, and the iterative nature of the research process. In conjunction with the learning objectives mapped onto the ACRL Framework, the course also utilized data feminism as a guide to develop discussion concepts on a set of intersectional data feminist concepts for conducting ethical, equitable and sustainable AI research. Data feminism allows for the discussion of such issues while centering a student’s own experiences and embodiment in the real world. This paper describes several aspects of importance to AI Literacy and data feminism, and the steps that the librarian took to build the course, as well as course activities and projects, learning outcomes, and anecdotal student evidence on the effectiveness of the course and its activities.

Introduction

In the Fall 2025 semester, a STEM librarian taught a 3-credit section of a first-year experience course (FYE) for the Honors College at Texas Tech University. This course sought to combine both information literacy and AI literacy and have evolving discussions about the ethical use of such technology. Titled “HONS 1303: Exploring AI Literacy in the Research Process,” as part of the FYE, students in each course are also part of a cohort that is expected to meet with their peer mentors from the Honors College on different days and times from the scheduled course. These insight and support from upper division classmates in the Honors College. Additionally, more than half the students in the class were either enrolled or hoped to be enrolled in the engineering college, with varying majors.

This paper will discuss the structure of the course and the outline, the lessons included, what went well and what might be done differently, and plans going forward, including expanding the course into an upper division course in the Spring 2026 semester for the Honors College. It also details the aspects of critical AI literacy and data feminism that were addressed in the course, as well as several exercises that incorporated critical information literacy themes in addition to critical AI literacy and data feminism. Data feminism is a way of thinking about data science and related technology informed by intersectional feminist thought, and works towards social justice in data science and AI [1] - [2].

Moreover, this paper is proof of concept of the course, and includes appendices of the syllabus learning outcomes, course schedule, and graded and ungraded in-class exercises. This course is of importance to engineering librarians because of the included activities, which can be adapted to other types of one-shot instruction sessions or academic library workshops, and to any engineering or data science librarian looking to create a course of their own. Many engineering librarians serve the computer engineering, computer science, and/or data science departments at their institutions, and may be engaged in this work.

Background/Literature Review

AI Literacy in Higher Education

There are many frameworks that have been developed over the past several years that discuss how engineering librarians and engineering instructors should be teaching AI literacy skills. For example, while AI literacy was defined in 2020 as “a set of competencies that enables individuals to critically evaluate AI technologies, communicate and collaborate effectively with AI, and use AI as a tool online, at home, and in the workplace” [3], one of the concepts mentioned most often is hands-on learning and solving real-world problems [3]-[5]. As more people engaged with chatbots like ChatGPT, Copilot and Gemini, this technology was aggressively marketed to higher education, and a veritable flood of “how-to” incorporate this material within scheduled teaching is now available to instructors [6] – [11]. Many educators agree that the ethics of AI, as well as the fact that the design and impacts of AI on daily life are intertwined and therefore should be taught in some way [12].

Differences then arise in what and how the issues around AI should be taught. Some papers take the stance of offering learning frameworks that can align educational outcomes with industry

needs, such as the AI & Data Acumen Learning Outcomes Framework [13]. This particular framework focused on 7 key knowledge dimensions (self-efficacy, ethics, collaboration, socio-cultural, innovation and creativity, cognitive and technical) and included various types of learning outcomes and learning activities [13].

As more researchers and educators use and implement the tools either in research workflows or in educating students, more issues about the tools, the hype about the tools, and the questions around labor rights and environmental impacts have taken center stage. Olivia Guest's research and writing on Critical AI Literacy (CAIL) specifically focuses on becoming critical of the hype of generative AI tools, and how researchers and faculty should reclaim higher education from big tech and colonialist practices [14]. Guest and other researchers define Critical AI Literacy as "an umbrella for all the prerequisite knowledge required to have an expert-level critical perspective, such as to tell apart nonsense hype from true theoretical computer scientific claims" [14]. Guest partners much of their research with Iris van Rooj, who streamed a symposium on this topic in October 2025 [15].

Librarians have are not on the sidelines of AI Literacy research or conversation. Lo's work on CLEAR prompting is a way to introduce students who are unfamiliar with the way chatbots actually work to begin to engage with the technology [16], [17]. CLEAR is a mnemonic device which stands for Concise, Logical, Explicit, Adaptive, and Reflective, and is just one way to think about how to engage with AI chatbots.

With regards to pedagogical frameworks for teaching AI from a librarian's perspective, Hervieux and Wheatley's [18] whitepaper from 2024 included 6 frames for AI Literacy: knowing the basic principles of AI, understanding the fundamental differences in AI types, experimenting with AI tools, reviewing the outputs and outcomes of AI tools, evaluating the impact of AI on a societal scale, and engaging with AI discourse. An example that uses critical AI literacy concepts is a tutorial from the University of Washington's library. This tutorial encourages students to think critically about using AI while also urging students to take breaks from AI [19].

These frameworks are not without some criticism, as librarians and other educators should take care in how we teach the research process now that there are generative AI tools. As McCrary [20] pointed out, when students and researchers rely too heavily on AI to do their research for them, they lose agency and become "passive passengers" in their own research process. Further, the addition of generative AI to our workflows in higher education is not without criticism. Additionally, as Purser [21] notes, the university itself is now on the chopping block as generative AI gets more integrated into student work, while administrators cut faculty jobs, academic programs and student services in pursuit of contracts with big tech. Purser provides other evidence that the use of words like "deliverables" and "learning outcomes" means that we are "using the language of revenue" [21].

Pairing Data Feminism and AI Literacy

A framework already existed that was developed with intersectional feminist thought to critically engage new technologies called data feminism [1] that I have been using since 2023 to

develop library workshops [23]. Klein and D'Ignazio updated their 2020 book into a paper in 2024 called "Data Feminism for AI" [2]. This paper examined the original concepts from their book and expanded the following concepts in detail [2]:

- Examine Power: Data feminism begins by analyzing how power operates in the world;
- Challenge Power: Data feminism commits to challenging power and working towards justice;
- Rethink Binaries and Hierarchies: Data feminism requires us to challenge the gender binary, along with other systems of counting and classification that perpetuate oppression;
- Elevate Emotion and Embodiment: Data feminism teaches us to value multiple forms of knowledge, including the knowledge that comes from people as living, feeling bodies in the world;
- Embrace Pluralism: Data feminism insists that the most complete knowledge comes from synthesizing multiple perspective, with priority given to local, Indigenous, and experiential ways of knowing;
- Consider Context: Data feminism asserts that data are not neutral or objective. They are the products of unequal social relations, and this context is essential for conducting accurate, ethical analysis;
- Make Labor Visible: The work of data science, like all work in the world, is the work of many hands. Data feminism makes this labor visible so that it can be recognized and valued.
- Future Principles for Feminist AI: Data feminism and the environment and data feminism and consent.

By pairing AI literacy concepts and information literacy concepts with data feminism, educators can create inclusive and socially responsible contexts for the use (or non-use) of technology like generative AI. In particular, the research and conversations around power and bias include the technological aspects as well as the sociopolitical contexts in which the technology is being used.

As a way of situating and expressing critique of technology and centering the student learner, data feminism combines well with the stated outcomes of information and AI literacies, especially around critical thinking skills about who might benefit and who might be harmed by the technology. Data feminist thought also aligns with the ACRL Framework, which is a set of knowledge practices and learner dispositions that can help librarians situate their teaching of research skills [22]. For example, when combined with data feminism, the frame "Authority is Constructed and Contextual" can help to clarify power differentials and algorithmic biases. Furthering this example, when teaching that certain algorithmic systems like search engines and databases use relevancy rankings to shape what is presented as authoritative, we can also ask students to think about which voices are amplified or silenced while examining how racial, gendered and socioeconomic power are embedded in data sets or results lists, as well as acknowledging access issues. One can expose hidden labor practices when using the "Information has Value" frame, showing how data is valued through copyright while simultaneously exposing the exploitation of marginalized groups while training algorithms and other AI systems, and more.

Combining information literacy with critical artificial intelligence literacy and data feminism allows for the critical examination of power and bias inherent in these systems. This paper seeks to

situate a 3-credit FYE course as part of the solution when teaching about social justice issues and information literacy issues in an AI literacy course.

Method: Practice Approach

Building the Course

While the steps in creating the course are listed below, many of them were part of an iterative process in producing the course. The course was structured so that students could investigate several different large language models such as ChatGPT, Claude, Perplexity, etc, as well as evaluate the outputs of the models which are being applied in library and search services, while gaining an understanding of just how much is left undecided or currently being debated in higher education circles. Additionally, I have been using data feminism to construct library workshops since 2023 [23], before research on CAIL or integration of data feminist thought into AI became more prominent, and I modified several of those workshops for use in the course. I chose data feminism because there was lack of criticality being applied to how librarians talked about the technology at the time, and data feminism with its focus on intersectionality and power structures, allows for this criticism to be central to the discussion.

The first step was to build the syllabus learning outcomes and map them to the ACRL Framework for Information Literacy for Higher Education [22]. These outcomes are tied to the learner dispositions of particular frames and are listed in Appendix A as the most relevant to teaching an AI Literacy course. Once the Honors College approved the course, the next steps could occur in the planning process, using the modules and pages in Canvas to plan out course lectures, in-class exercises and other methods of assessment such as in-class discussion. Final projects included a Portfolio of what they were learning and gathering throughout the class and a final 5-minute presentation on a research topic related to AI.

The course had assigned readings from *AI Snake Oil* [24] which was provided by the library DRM-free. This book was written in a clear manner and provided many criticisms of artificial intelligence as it's being applied to different services and industries in the US. Many of the misuses of AI examples in *AI Snake Oil* are also listed in works by Virginia Eubanks [25] and Ruha Benjamin [26], including the expose from ProPublica in 2016 on the use of AI to identify recidivism rates of released parolees, and the racial bias implicit in the system [27]. These systems are still in place and used across the US. The book is not perfect, as it is missing a prime example about bias in image systems -- when Joy Boulamwini worked with the IJB-A dataset, a government dataset that was supposed to have the widest geographic diversity based on public figures, she discovered that the dataset was more than 80% light skinned people, and had to create her own smaller, more representative data set to train image recognition algorithms [28].

Secondly, data feminist concepts were integrated into lessons from the beginning of the course, as the instructor set up a class lecture on the Long and Magerko definition of AI literacy, and included the frames of data feminism, contextualizing critique for the rest of the course. Within the class, these data feminist concepts were taught alongside other concepts related to challenging of power structures, such as a discussion about the AI hype cycle and who benefits when large

corporations participate in the hype of a product. Another example in class came when discussing databases and filters, these tools can create research echo chambers, and how we might be able to ensure that underrepresented and minority authors might be cited more often.

Additionally, black women data science researchers were also incorporated in lectures throughout the course, but especially when discussing bias in training sets. This included using Joy Boulamwini's "AI, Ain't I a Woman" video [29] and a lecture which included the definition of the "New Jim Code" which is "the employment of new technologies that reflect and reproduce existing inequities but that are promoted and perceived as more objective or progressive than the discriminatory systems of a previous era" from Ruha Benjamin's *Race After Technology* [26]. Another important author around AI and technology criticism includes Virginia Eubanks's *Automating Inequality* in which Eubank's shows in detail how these automating systems hurt the poorest in US society [25]. Ashley Shew's *Against Technoableism* describes "the harmful belief that technology is a "solution" for disability; that the disabled simply await being "fixed" by technological wizardry; that making society more accessible and equitable is somehow a lesser priority" [30] – [31]. Meredith Broussard's definition of technochauvinism was also included, which is the belief that technology is always the solution [32]. Lastly, extra credit readings from *Data cartels: The companies that control and monopolize our information* by law librarian Sarah Lamdan [33] and *Calling bullshit: The art of skepticism in a data driven world* by scientists and researchers Carl Bergstrom and J. D. West [34] were included in the course materials.

This course was structured so that each week students could come to class and socialize for the first ten minutes, getting to know their classmates through Padlet discussion questions. Padlet is an online discussion board platform that can also run polls, create digital whiteboards, presentations, tables, timelines and more. It also now has AI integrated tools which I have not used. This use of Padlet also allowed students to build relationships within their cohort and for the instructor to get to know the students in the class. The course took place on Tuesdays and Thursdays for 80 minutes.

This instructor took a fluid approach to teaching generative AI. Most links provided to students came from news or tech websites, as well as several research papers or relevant websites like Baker and Hostetler Law for their list of AI and Copyright/IP lawsuits [35]. Appendix B contains the complete course outline, but some topics covered that might be of interest to engineering librarians teaching these concepts include the following: AI and Labor/Ownership; AI and Copyright; AI and Anthropomorphism; AI and Privacy.

Graded Exercises

Following this narrative list is a chart (Fig. 1) with the exercises and media of activity, which are mapped course learning objectives.

The first graded exercise was the Library Research Worksheet (Appendix C) based on a freely available database exercise worksheet [36]. I have modified this worksheet several times over the past 6 years for various engineering on-shot classes. The latest modification added questions about generative AI features, and how they might differ from traditional library searching. This worksheet is designed to give students space to brainstorm research keywords and helps them to

understand the basics of library and database searching, including Boolean operators and subject headings. For the HONS 1303 course, the students were directed to work on their own. However, this worksheet has been used in a think-pair-share activity in engineering library research instruction sessions by the author.

For group exercises, students would randomly pick numbers from a TARDIS mug. Corresponding numbers were then assigned to groups, and each group would work together to evaluate that week's topic area. The first group exercise was the AI Model Evaluation (Appendix D), in which the students were given a worksheet. I acknowledge that part of this worksheet was developed by Copilot and told the students this, but significant changes were made to the worksheet as more relevant questions were added that took into consideration data feminist concepts. Chatbots included ChatGPT, Copilot, Lumo, Perplexity and Gemini.

The CLEAR Prompting notebook exercise was an individual exercise in which students were assigned a chatbot from the group exercise and told to use the CLEAR prompting method [16] after a brief explanation. Instructions for this assignment were: "Using your topics that you want to present on for your final, apply the CLEAR prompting method to the LLM we explored in the last session. You should have access to the OneNote Notebook. Give at least 5 iterations of a prompt, and include the LLMs responses. Evaluate the accuracy of the information provided and the iterations of the prompts. Make a copy of the page you edited in the Notebook, and save it to your Draft Portfolio." Individuals were expected to share what they learned in class about each prompt and their particular chatbot, which included ChatGPT, Copilot, Lumo, Perplexity and Gemini.

The third graded exercise was to explore a social sciences data set. After a brief lecture on social science research, students were broken into groups to read articles that use the General Social Survey (GSS) data sets [37]-[42]. They were then expected to discuss the articles and how data was being used in the papers. For the second part of the activity, students were exposed to the General Social Survey Cumulative File from UC Berkeley's Survey and Documentation Analysis website [43]. Students were given minimal instructions on how to make a chart based on the data in the file. While there are thousands of variables to study in the file, not all variables are available for all years, and students needed to think about the types of questions they wanted to be able to answer within the limits of the data set. Students learned through this hands-on activity how to recode the chart creator and begin to interpret the data. Students also learned that not all corresponding data points may have any correlation to each other at all, or any data to support their original questions.

The last graded exercise was the "AI in Library Databases vs Commercial "Research Tools"" exercise (Appendix E), which took place over two class sessions. Part 1 of the assignment evaluated the AI chatbots in the databases that the university library had access to, including Web of Science, JSTOR, Science Direct, O'Reilly and Proquest Ebooks. O'Reilly's chatbot was not working for the class on the day of the assignment, therefore it was skipped. Some students needed to be directed to the AI chatbot, as the location of the LLMs may not be obvious. I acknowledge that 3 questions on this worksheet were developed using Copilot, however, most of the questions on the worksheet represent library research questions that students and novice researchers should be thinking about when they engage with LLMs in a database.

The second part of the assignment was to evaluate an AI Research tool (Scite.ai, SciSpace, Connected Papers, Elicit, Semantic Scholar and Academic GPT) using a worksheet that was a slightly modified version of “AI Tool Evaluation Worksheet: A Practical Resource” developed for psychologists and included questions about ethics boards and patient privacy [44]. Students were again expected to share what they learned about their assigned database or “AI research tool” with the rest of the class.

Other graded work included bi-weekly reflections on their transition to college life because this was a First-Year Experience course. In these reflections, students were also asked to include an aspect of AI that they thought was interesting from their interactions with social media or the news that week. Students needed to cite what they were finding, which allowed the students to practice their citation skills. They also had an option to do a digital detox or “no screens hour” where they could write about what it was like to leave their devices off for an hour, what they chose to do with that hour, and how they felt after.

Ungraded Exercises

Two other exercises were included in the class but were not graded. For the AI and Privacy week, an exercise was developed from the Pulitzer Center’s “How Social Sentinel Crossed Student Privacy Rights” lesson plan [45]. Students were again broken into groups and asked to research for keywords related to AI and privacy during year ranges. These years were 2010-2015, 2016-2020 and 2020-current. Students were directed to research specifically newspaper or magazine articles, cite the articles, and share with their group about how the news was covering this topic, and discuss how the coverage of AI and privacy has changed over time in a OneNote class notebook. Groups were then asked to share what they found with the class.

The other ungraded exercise was a Visual Literacy exercise based on Oscar Keyes and Kate Ogden’s work at the Virginia Commonwealth Library [46]. After a brief lecture on visual literacy, art, and the history of photographic manipulation and misinformation, students worked in pairs to place 3 “photos” or pieces of art on a PowerPoint slide. Instructions were given to the students to find 2 real photos and one fake photo (or use an LLM model to create a fake photo), and tell the class a story about each photo. Each group was to have 1 fake photo paired with a fake story, 1 real photo paired with a real story, and 1 real photo paired with a fake story. When they were done, the class was to guess which one had a real photo with a real story, a fake photo with a fake story and a real photo with a fake story. This allowed students to be very creative in their story/photo pairings.

Main Topic/Module	Media of Activity	Course Learning Outcomes (Appendix A)	Graded or Ungraded	Group or Individual
Library Research	Library research worksheet (Appendix C), on paper	1, 4, 5	Graded	Individual

Evaluating and Detecting Tools	AI Model Evaluation Worksheet (Appendix D), on paper	1, 3, 4, 6	Graded	Group
AI and Prompting	Shared OneNote online	2, 4	Graded	Individual
AI in Library Databases	AI Library Databases vs AI “Research Tools (part 1) (Appendix E), paper submission.	1, 3, 4, 6	Graded	Group
AI in Commercially Available “Research” Tools	“AI Tool Evaluation Worksheet: A Practical Resource” paper submission. by A.B. Lockwood. https://lockwoodconsulting.net/blog/ai-tool-evaluation-worksheet-a-practical-resource	1, 3, 4, 6	Graded	Group
AI and Privacy	Shared OneNote online	2, 3	ungraded	Group
AI and Visual Literacy and Misinformation	Shared PowerPoint Slide Deck	1, 3, 4, 6	ungraded	Group
Data Literacy	No sharing of charts. Students were assessed via discussion and inclusion in their Portfolios.	4	ungraded	Individual

Fig. 1: Table with HONS 1303 class activities and course learning objectives

Final Projects

With regards to the Draft Portfolio and Final Portfolio, students were meant to keep track of their work throughout class. Specific instructions were given to include each of the worksheets, and the AI and Privacy exercise. This project was meant to show a student’s ability to engage in and reflect on the research process, and they were to also include a brief outline and thesis statement about their Final Presentation. Students could showcase their semester’s work through a OneNote notebook, a Google website, or Microsoft’s Sway. They were to also include their reflection exercises, a half-way point reflection about using the tools to be included with the Draft Portfolio (due at midterms), and a final reflection on the course.

Their Final Presentation was also meant to be an in-person presentation on an aspect of AI that they were researching throughout the class, but this changed to an online video in which students were assigned to peer review each other after a student vote. This assignment was built in Feedback Fruits, a Canvas integration that can be used in online courses to make media such as videos more engaging for students. Feedback Fruits also allows students to peer review each other, and can automatically assign students for peer review. Students were given guiding questions in the form of a rubric to rate and comment on their peers’ work. Peer review rubric was developed from a resource at Brigham Young University’s Research & Writing Center [47].

Class Discussions

Students also earned attendance points for which they would be asked to participate in that day's discussion topic. Three class discussions not related to any assignment but were notable and are presented here. Early in the course, the class explored what it means to anthropomorphize generative AI, and it felt important that this conversation happened before exploring with the models. The conversation was especially timely considering that lawsuits had been filed against ChatGPT [48] and Character.ai [49] in September 2025 because several teenagers had committed suicide based on the advice of the LLMs in which they were having a para-social relationship. We also discussed the types of lawsuits being filed and who should be held responsible. Examining these power structures, such as the relationships between people, corporations, libraries, etc., reveals how complicated these relationships can be, and where data feminism can help contextualize these issues.

Within the AI and Labor and Copyright module, two separate lectures were built. As many people in the news and tech circles continually call people “Luddites” for refusing to adopt “new tech,” the first lecture explored the history of labor movements and what the Luddites of 18th Century England were actually fighting for when they were destroying the mills or the machinery, based on readings from *Blood in the Machine* by Brian Merchant [50]. The AI and Copyright lecture was an updated version of my accepted presentation at Texas Library Association Annual Conference in 2024 and 2025 [51]. Students were then able to make the connections during discussion about the US's current copyright guidance on generative AI as “author” or “creator” and stolen labor, and the AI and Anthropomorphism module.

Lastly, during the AI and the Environment module, students were asked to watch a video in class on the data centers constructed in Virginia and how this was affecting the people who lived nearby [52]. This video was very clear that the people who had power in the situation were the people who own and build the data centers. Discussion centered on what it meant to have a data center in your neighborhood, and what, if any, actions citizens can take when that happens. Additionally, students learned about government and corporate documents, and how these documents might be accessed by journalists and researchers.

Results: Analysis

With regards to combining data feminism and information literacy to build an AI Literacy course, this became almost second nature to the instructor. Throughout the fall, students were asked to think about how power in relationships and structures can affect our understanding of certain ways that AI is being developed and integrated (willingly or unwillingly) into our daily lives. Students were also asked in nearly every class to think about the types of biases we might be coming across in that module or topic area, and who those biases might be harming. Space was also made for students who might be uncomfortable using the chatbots for personal or moral reasons, so having group work and discussions allowed these students to participate.

I acknowledge that I did not submit an IRB to rigorously test the students or report out their grades on the in-class exercises or final projects, or do any pre-test or post-test analysis or student survey. However, this class was not structured in a way that gathering any of that information would

have been useful at that time. No quizzes or tests were administered, as instead the students were assessed on their reflective capabilities and research techniques by completing the worksheets while working in groups, then reflecting and sharing their results through discussion in-class.

They were also assessed in their Draft Portfolio, Final Portfolio and Final Presentation. For the Portfolio project, students were assessed on their ability to follow instructions and include the information presented and discussed throughout the course and present it in a creative way. If students were missing required items from the Final Portfolio, points were deducted. They also needed to include a final reflection in the Final Portfolio.

By learning reflective research techniques, students were able to display both creativity and individuality through their Draft and Final Portfolios, as well as their Final Presentations. Final Presentations had a range of topics that students were eager to talk about. Some talked about what they learned in the course, while some picked a topic that they had been researching all semester, such as AI and environmental impacts. Most students who turned in their Final Presentations did well according to the rubric provided, and met the course learning objectives throughout the course. Because the students are part of the Honors College, and the ones who were in this class were especially self-motivated and eager to share their insights, which were demonstrated in their final projects.

Anecdotal Evidence of Success

With regards to the learning outcomes (LOs) of the class, the course seemed to be successful on multiple fronts, with students beginning to recognize their own agency in the research process, their own biases and how society biases can be reflected in the LLMs. Of note were LOs 2 and 3, developed with the ACRL Frames Information Creation as a Process and Information Has Value, where students began to understand the commodification of information, and why the addition of LLMs to research processes may not actually confer authority. Further, their final projects represented the following learner dispositions: “value intellectual curiosity in developing questions and learning new investigative methods;” “maintain an open mind and a critical stance; value persistence, adaptability, and flexibility and recognize that ambiguity can benefit the research process.”

This university issues student evaluations of courses, and this course was no exception. Only half of the class filled out the evaluations, but the course was rated favorably, and students’ comments were also favorable. The other evaluation was in the form of a peer-librarian evaluating the instructor during the Visual Literacy/AI and Misinformation module, where the reviewer said he might steal some of these teaching techniques for their own.

Anecdotal evidence suggested that students enjoyed the course. Many came in ready to discuss that week’s Padlet questions as well as the module topic, and excited to explore new AI models that they had not come across yet. This was especially true of Perplexity.ai, where a student commented once they started exploring, shouted “this thing is so goated!” After this module, a few of them admitted to using Perplexity more often and had made a conscious choice to leave Google

behind, even after discussion on the lawsuits filed against Perplexity for copyright violations and other privacy issues.

The other activity students really enjoyed was the visual literacy activity paired with the misinformation module. There were a lot of smiles, laughter and groans at the guessing of which photo was real with a real story, real with a fake story and fake with a fake story. Trying to outsmart the instructor may have also been a factor in their enjoyment. Most students were able to correctly ID the fake photos from their classmates, while the real photo/fake story pairings could be harder to discern.

Students also enjoyed the various guest speakers we had, including our Pop Culture Librarian talking about AI in comics and pop culture. They also enjoyed the trip to the Southwest Collections and university archives building to discuss AI and oral history with an oral historian and librarian. I also invited an engineering professor to talk about how AI is being used in their field, as more than half the students in the class were either enrolled or hoped to be enrolled in the engineering college.

One other important note, once students played with the chatbots, or tried to research with them, they realized how limiting it is to use certain chatbots versus a keyword search in databases like Web of Science. Students commented that several tools oversimplified research, and that they should probably read the whole research paper. We also discussed ways in which many people read research papers, and the instructor found that giving students time in class to read through a research paper helped to contextualize why relying on a chatbot to summarize it could be problematic. Students would test the articles they read with the LLMs they were testing.

Using shared techniques like the OneNote notebooks for the other activities was preferred, as students could easily return to the shared notebook or shared slide deck for reference to include in their Final Portfolio. However, with the handouts, some of the students lost their original paper handouts, even when directed to keep them. This was especially true for the first handout, the Library Database Worksheet, and several students asked for another to re-do it so they could include it in their Draft Portfolio. Asking students to keep this information throughout the course helped to keep the students engaged with their own research processes and with the course itself. Once graded, the students took photos of the worksheets once they were returned to them, even though there were scanners located in the building that the class met in. They needed to include all the worksheets in their Final Portfolios.

Instructor Reflection on Future Improvements

From the instructor's perspective, there are several future improvements to the course that could be made. One could add more information from CAIL [14]. Other worksheets and questions from the Civics of Technology project could be included or used to modify existing work, which I have only recently found, which has multiple worksheets and other curricula based on social justice in technology [53]. Another example lecture session could focus on AI Hype and how these tools are being marketed to the public. I also rewrote some of the course learning objectives to explicitly state data feminist concepts when I taught a similar class in the Spring 2026 semester for upper-division Honors College students.

Future classes will probably also use shared Google documents instead of Microsoft's OneNote notebook, mostly because of the ease-of-use problems that students and the instructor encountered with the Microsoft product.

Additionally, more information should be given about how these new AI systems are being developed to censor information. While this course did briefly read about the Ex Libris (Summon) research tool and how it produces "user error messages" when it came to researching "sensitive topics" like the Tulsa Race Massacre or the Armenian Genocide [54], there have been more recent examples in which AI bots are being deployed to ban books from public and school libraries in Texas [55]. Lastly, sometimes the worksheets seemed a bit long, and there could be ways to have a flipped classroom, perhaps sending students away with homework with instruction to be prepared to discuss and show us what they did during class time. This option was not preferred, as the instructor would rather the students work together in class, so they aren't tempted to just ask a generative AI model the answer, and to teach the students collaborative techniques.

I recognize that there are many other readings that could have been included, such as Sofiya Noble's *Algorithms of Oppression* [56], and have added papers like Bender, Gebru, McMillan-Major and Schmittell's "On the Dangers of Stochastic Parrots" [57], Shah and Bender's work on information access systems [58], and the recent research on cognitive offloading [59] to the syllabus for the Spring 2026 Honors 3303 "AI Literacy in the Research Process" course.

Conclusions

The results of this course impact engineering librarianship in that this course and its sample worksheets could be used in engineering one-shots or a whole course for hands-on or flipped classroom techniques. Especially as STEM or data science librarians are asked to step up and create tutorial content, workshops, one-shots, the integration of data feminist concepts into critical AI literacy and information literacy should not be overlooked. Librarians can teach AI literacy with data feminism to help contextualize their criticism of the technology while using active learning techniques. Librarians are in a prime position and seen as authorities for educating on such topics, especially since these chatbots are being added to research databases, teaching students and others how to be cautious about the types of information they might come across while using them is crucial.

Additionally, there is evidence that students and others engage in "cognitive offloading", where there is a significant negative correlation between frequent AI tool use and critical thinking abilities [59]. If these chatbots are to "help" with students understanding of the papers they intend to summarize, are students going to be able to recognize when the computer is wrong, or biased? There is an assumption of authority in these chatbots "know" what is in the paper they "read" and can contextualize it, but the reality is that they oversimplify the content of research articles. The problem being, as Bender and many others have noted [60], is that these bots don't think and don't have context the way that humans do. Librarians are still looked to as an authority when it comes to anything related to information. Librarians are also some of the main voices that are critical of this technology.

While many engineering librarians are not actually teaching 3-credit courses, if an engineering librarian is teaching a one-shot session, some aspects about prompting, biases, power relationships, or stolen labor and plagiarism can be added to those sessions. For example, I have used the Library Database Worksheet in my one-shot library research in engineering classes and asked students to think about how information access can be limited when students are no longer attending college.

Students in the HONS 1303 course were engaged in active learning with hands-on lessons using LLMs, chatbots, and image generators, as well as traditional research tools like library databases. These learning experiences exposed students to the limits of this technology, while at the same time engaging them in creative projects. Several active learning exercises involved group work, with the students utilizing a shared OneNote notebook or PowerPoint slide deck to report back to the class what they found.

This course can serve as a model for engineering librarians who are looking to develop such courses in the information literacy field and can easily be modified for other academic fields of study. The course used the ACRL Framework learning dispositions and developed them into learning outcomes. “Data feminism for AI” [2] was a primary resource for understanding how data and AI models are shaping our lives and was a crucial component in the course, and in educating others on how these tools are not neutral in their implementation.

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Appendix A - Course Description and Learning Outcomes

Course Description:

Critical look at how AI and generative AI tools are impacting the social science research environment, questioning the use and implementation of AI, and examining its sociocultural impact. Students will apply cultural critique and information literacy methods to artificial intelligence while learning the fundamentals of how these technologies work and how they fail. For non-computer science majors. No coding experience necessary or will be expected.

Course Learning Outcomes:

In this course, we will learn to: Critically evaluate specific AI tools that are being used in real world and research applications. This includes identifying problematic issues with generative AI tools and learn to evaluating digital tools appropriately, learn digital literacy skills, and apply them. We will apply these to current research practices in higher education, with particular attention to how AI is being applied and misapplied in certain real-world applications.

Learning Objectives:

Bulleted sentences start as “Learners...”

1. We will explore how AI tools can be biased based on a variety of methods, and how these biases can effect real world outcomes. We will also explore AI tools in context of research practices and how credible and reliable they are, through questioning and evaluation.

Frame: Authority is constructed and contextual

- “...develop an awareness of the importance of assessing content with a skeptical stance and with a self-awareness of their own biases and worldview.”
- “use research tools and indicators of authority to determine the credibility of sources, understanding the elements that might temper this credibility”
- “question traditional notions of granting authority and recognize the value of diverse ideas and worldviews; are conscious that maintaining these attitudes and actions requires frequent self-evaluation”

2. We will explore the use of AI in certain spaces within the research process. We will also explore what synthetic text, images and other content may have on the future.

Frame: Information Creation as a Process

- “... accept the ambiguity surrounding the potential value of information creation expressed in emerging formats or modes”
 - “articulate the capabilities and constraints of information developed through various creation processes; assess the fit between an information product’s creation process and a particular information need; articulate the traditional and emerging processes of information creation and dissemination in a particular discipline.”
3. We will explore how AI tools affect the commodification of information, especially surrounding the use of copyrighted materials to train LLMs and discuss the information ecosystem. Students will be able to articulate and make informed choices about the issues on AI and privacy, and the commodification of information.

Frame: Information has Value

- “...understand that intellectual property is a legal and social construct that varies by culture; understand how the commodification of their personal information and online interactions affects the information they receive and the information they produce or disseminate online”
 - “...understand their rights and responsibilities when participating in a community of scholarship; respect the original ideas of others; value the skills, time, and effort needed to produce knowledge; see themselves as contributors to the information marketplace rather than only consumers of it;
4. We will explore new investigative methods and consider flexibility, adaptability and persistence in critically engaging with AI tools while seeking multiple perspectives, comparing and contrasting AI tools with traditional online and library research methods.

Frame: Research as Inquiry

- “consider research as open-ended exploration and engagement with information; appreciate that a question may appear to be simple but still disruptive and important to research;”
- “value intellectual curiosity in developing questions and learning new investigative methods;”
- “maintain an open mind and a critical stance; value persistence, adaptability, and flexibility and recognize that ambiguity can benefit the research process;”

- “seek multiple perspectives during information gathering and assessment; seek appropriate help when needed;”
 - “follow ethical and legal guidelines in gathering and using information; demonstrate intellectual humility (i.e., recognize their own intellectual or experiential limitations).”
5. As we explore the research process and AI tools, students will recognize themselves as part of a larger scholarly conversation, and not merely consuming it.

Frame: Scholarship as Conversation

- “understand the responsibility that comes with entering the conversation through participatory channels;”
 - “value user-generated content and evaluate contributions made by others;”
 - “recognize that systems privilege authorities and that not having a fluency in the language and process of a discipline disempowers their ability to participate and engage.”
6. Some AI tools are being integrated into parts of the search process, and we will explore how the search process is iterative and nonlinear and learn how to evaluate the information produced from AI tools.

Frame: Searching as Strategic Exploration

- “nonlinear and iterative, requiring the evaluation of a range of information sources and the mental flexibility to pursue alternate avenues as understanding the topic develops”
- “understand that first attempts at searching do not always produce adequate results; realize that information sources vary greatly in content and format and have varying relevance and value, depending on the needs and nature of the search;”

Appendix B - Course Schedule

Week	Topic
Week 1, Day 1	Introduction to course, to course instructor, to each other
Week 1, Day 2	Research process and ethics
Week 2, Day 1	AI Definitions and Critical Theories, chapter 1 discussion
Week 2, Day 2	University Libraries lecture and activity
Week 3, Day 1	History of Computers/AI
Week 3, Day 2	AI and Anthropomorphism
Week 4, Day 1	Evaluating and Detection Tools
Week 4, Day 2	Finish Evaluation Exercise, in-class discussion
Week 5, Day 1	CLEAR Prompting
Week 5, Day 2	Finish CLEAR Prompting Exercise, in-class discussion
Week 6, Day 1	AI and Privacy
Week 6, Day 2	AI and the Environment
Week 7, Day 1	AI and Labor
Week 7, Day 2	AI and Copyright
Week 8, Day 1	AI and Visual Literacy
Week 8, Day 2	AI and Misinformation, finish visual literacy assignment
Week 9, Day 1	Data Literacy in Social and Behavioral Sciences
Week 9, Day 2	Data Literacy in-class assignment
Week 10, Day 1	AI and Archives and Oral Histories at the SWC (guest speaker)
Week 10, Day 2	Data Viz (Guest Speaker)
Week 11, Day 1	AI in Social Sciences and Behavioral Sciences, ethics
Week 11, Day 2	AI and Pop Culture (Guest Speakers)
Week 12, Day 1	AI in Library Databases (part 1)
Week 12, Day 2	AI in Commercially Available Research "Tools" (part 2)
Week 13, Day 1	AI in Smart Cities (Guest Speaker)
Week 13, Day 2	AI in Law and Education
Week 14, Day 1	AI and Cognitive Offloading
Week 14, Day 2	Thanksgiving, no-class
Week 15, Day 1	Ask questions, work on Final Projects/Presentations
FINALS	

Appendix C - Database Searching Worksheet

This worksheet provides activities that will help you use the databases related to engineering and other STEM topics to search for and find information for your research topics.

- Select keywords using a brainstorm strategy
- Choose relevant databases and employ critical evaluation skills to identify relevant material
- Construct, employ, and revise as necessary search statements that databases will understand

Step 1: Brainstorm Keywords

a) Write a sentence or two describing your topic.

b) From your description above, separate your topic into main concepts. Use the table below to list these main concepts. In the column below each main concept, write any other synonyms or related keywords. (Depending on your topic, you may or may not need all the columns).

Concepts	1 st Concept	2 nd Concept	3 rd Concept	4 th Concept
Synonyms /keywords				

2. Formulate Your Search Statement: (aka “prompt engineering” for databases)

a) Most of the library’s research databases will not work effectively or efficiently if you type a natural language query or, in other words, type a sentence or phrase as if you were asking a question out loud. Instead, databases require that you construct a search statement that the database will understand. A good database search statement usually includes several keywords that have been combined by using various operators.

Databases generally require the following:

- a. **Use the “and” operator** to combine terms and retrieve items that contain all of the terms.
- b. **Use the “or” operator** to retrieve items that contain one or more of the grouped terms (not necessarily all of the grouped terms). For instance, use the “or” operator to connect synonyms.
- c. **Use the asterisk (*)** as a truncation symbol after a word root to retrieve articles with the word root and all of its possible word endings.
- d. **Phrase searching** – some databases are more literal than others. You can use phrase searching, so instead of the database searching each individual word, you can have it search those words together. (“climate change” vs “climate AND change”)

3. Select a Database to Find Full-Text Articles Using Your Key Words

Now, let’s try using your search statement in a database on the Canvas page.

a) What search statement did you type in the search box? How many articles did you retrieve?

b) What are the search filters available in this database? Does this database have any generative AI features available? Describe any and all features that might be helpful for you.

c) What is the subject coverage of this database? How will it help you with your writing and research projects?

Appendix D - AI Tool Evaluation Worksheet

Tool Name: _____

Evaluators: _____

Date: _____

Ratings are 1- 5, with 1 being the worst and 5 being top notch.

1. Functionality and Features

Criteria	Description	Rating 1-5, Notes
Core Capabilities	Does the tool perform its intended tasks well? What are its intended tasks?	
Accuracy	Are the outputs reliable and correct? Are you able to find documentation that says otherwise? Are the outputs engaging in burstiness or perplexity?	
Integration	Can it connect with other tools or platforms? Do you need it to?	
Customization	Can users tailor it to their needs?	

2. Usability and Design

Criteria	Description	Rating 1-5, Notes
User Interface	Is the design intuitive and easy to navigate?	
Accessibility	Is it usable by people with diverse needs?	
Learning Curve	How easy is it to get started?	
Documentation	Are help resources and tutorials available?	

3. Ethics & Transparency

Criteria	Description	Rating (1–5) and Notes
Data Privacy	Does it protect user data? How do you know for sure?	
Bias & Fairness	Are outputs free from harmful bias? Did you test it or were you able to search for an answer?	
Transparency	Are its methods and limitations clearly explained?	
Accountability	Is there a way to report issues or errors?	
Ethics	Does this tool’s website have an ethics board? Who is on it?	

4. Impact & Value

Criteria	Description	Rating 1-5 and Notes
Usefulness	Does it solve real problems or add value?	
Cost	Is it affordable for you as a user? What about as a student? What about other types of costs such as environmental, etc? Is there any information about this particular model's or company's environmental impact? Labor impacts?	
Scalability	Can it grow with your needs?	
Innovation	Does it offer something new or unique? Is it part of a hype cycle? Can you see any reviews of the product, or are the "innovations" and endorsements only contained within the AI tools website?	

5. Final Thoughts

- **Strengths:**
- **Weaknesses:**
- **Would you recommend this tool? Why or why not?**

Appendix E - Part 1 of AI in Library Databases vs AI "Research Tools"

HONS 1303: AI in Library Databases vs AI Research "Tools"

*Note: Room on the paper is given so that students have plenty of space for writing their responses. This worksheet was edited for publication, but when handed to students was 5 pages long.

Name:

Topic being researched:

Database:

Go to the database assigned to you and conduct a traditional Boolean search. This should be the topic for your final presentation.

What is the search string?

Citations of the two works (APA or MLA):

Publication/material type:

Summaries of 1-2 relevant articles or chapters (not AI generated, use your own words) Does this database have an AI model embedded? What kind of model? What does this model do?

Compare your summary with the AI summary of this tool offers one. Compare the differences and similarities. Is anything over simplified or misrepresented by the AI?

What prompts are you using for the LLM? What are it's responses?

Are you able to get any historical context from the research or supplemental information about the context in which the article was written?

Compare this to a traditional search in the database. What is different? What is the same? Why would you use or not use the AI tool?

Evaluate the following:

Is the AI tool accurate? Is it oversimplifying the research?

Does it address the research question?

Are the sources cited and traceable?

Is there any noticeable bias or assumptions?

Is it censoring any information? How would you know or try to find out if it is?

Depth of analysis: what is the depth of the analysis? Eg., Is it complex and nuanced?

What strengths/limitations did the AI output have compared to the database sources?

What would you change about your prompt or search strategy next time?

What kind of AI policies do you think should be implemented when using AI in for research in this way?