



CSCI378: Human Artificial Intelligence Interaction (HAI)

[<LINK TO COURSE WEBSITE>](#)

Instructor:

Professor Iris Howley (she/her): call me "Iris" or "Professor Howley"

Email: ikh1@williams.edu

Student Help Hours: by appointment, using the following link: [<GOOGLE CALENDAR LINK>](#)

Course description:

As future innovators of the Artificial Intelligence frontier, we must be intentional about the impact our creations (and our creations' creations ...) have on our communities, our families, ourselves. AI is only useful in how it positively impacts the human experience, and in this course we explore how to harness the power of AI for the benefit of our world.

Course Structure

Learning Objectives:

After completing this course, students will be able to:

- Build intelligent interactive technologies
- Critically anticipate AI technology outcomes
- Intentionally design AI technologies for use by people
- Engage in current ongoing discussions of HAI

Courses in the Time of COVID:

I understand that this course is being offered in a time of tremendous uncertainty, and I recognize that you (and I) may encounter unexpected challenges during this semester. That includes challenges related to health and illness, technology, caregiving responsibilities, work responsibilities, and more.

My goal this semester is to support you in doing the best work you can in light of the challenges you face. I understand that Williams students face tremendous pressure to work hard, get “good” grades, and be as “successful” as possible. That said, I encourage you to remember that your health and well-being are far more important than the work you do in this class or any class. And I encourage you to take the time you need to care for yourself and for your loved ones.

If you tell me you're having trouble, I will not judge you or think less of you. I hope you'll extend me the same grace. I also ask that you be patient with me if the challenges of this semester force me to make last-minute changes to the course plan. I will do my best to communicate any changes clearly and make them with respect for the inconvenience, frustration, and confusion that change may cause.

You *never* owe me personal information about your health (mental or physical). You are *a/ways* welcome to talk to me about things that you're going through, though. If I can't help you, I usually know somebody who can. If you need extra help, or if you need more time with something, or if you feel like you're behind or not understanding everything, **do not suffer in silence!** Talk to me! I will work with you. **I promise.**

Please sign up for a time to meet with me during student hours at <https://bit.ly/haicalendar>. I'm also available through e-mail and the course discussion forum.

I want you to learn lots of things from this class, but I primarily want you to stay healthy, balanced and grounded during this crisis.

Course Format:

This course was created from the beginning with remote learning in mind and I am excited to provide a learning experience that fully embraces its onlineness. As such, this course will be offered as a combination of asynchronous course materials with weekly small, synchronous discussion sections (conferences). All course materials will be posted on and accessible through Glow. Deadlines will be available in Glow, but in general, prior to your conference section, you should complete all readings, videos & listening materials, and checkpoint assignments for that week's module. After your conference section, there will be an engagement activity & response that is due. I will generally try to post readings, videos & listening materials on Thursdays and Mondays. There will be approximately 5 larger assignments, and one final project as well.

Conference Sections:

Many of the concepts and topics we will discuss this semester are best understood through discussion and interaction with others. Our small conference sections are limited to 8 students, so that we may all get to know one another and learn together closely. Please attend your scheduled conference section, although if you must miss a one-off section, it may be possible to attend another to ensure you do not miss a learning opportunity. Conference sections occur *once* per week, on either Tuesday or Wednesday.

Course Grading and Assignments

Grading and Self-Assessment:

This course is “ungraded.” Unlike in traditionally graded classes, your grade will be determined based on your own self-assessment of your learning and effort in the class, with the possibility of adjustments up or down from me.

During the semester, you will be asked to complete three short self-reflection questionnaires. These questionnaires will include a series of questions about your work in the course.

Specifically, you will be asked to:

- Talk about the work you have done in the course. e.g., How much effort did you commit to the reading and listening materials, the engagement activities, the comprehension checks, the class videos, and the class projects?
- Talk about your successes and struggles in the course. e.g., When did you feel most successful in the class? What challenges did you encounter with the concepts, the assignments, or the logistics of the course?
- Talk about opportunities for improvement. e.g., What steps could you take to deepen your understanding of course concepts or increase your engagement in the class?
- Propose the grade you feel you should receive in the course (up to that point), based on your: level of engagement; comprehension of the course material; quality of your engagement activities; and quality of your assignments.

Briefly explain why you would give yourself that grade.

When assigning final grades, I will strive to honor your assessment of your own performance and progress in this course. However, I reserve the right to alter your proposed grade as appropriate, based on my own evaluation of your performance and progress in the course as a whole. If such an alteration seems warranted, I will contact you to set up a meeting to discuss your work in the course.

A suggested grading breakdown for your self-assessment purposes is provided below:

Attendance & Active Participation	10%
Engagement Activities	20%
Comprehension Checkpoints	20%
Assignments & Project	50%

Videos and Listening Materials:

Each week I will assign instructional videos, video lectures, or podcasts that must be watched prior to your conference section. Some of these videos explain key AI or Human-Computer Interaction (HCI) concepts. Other videos offer examples of key concepts or explain how the reading materials illustrate these concepts. Still other videos introduce and explain the engagement activities and other assignments for the class. In general, there will be two sets of Video/Audio materials for each module. One posted on Thursday and one on Monday.

Readings:

Each week includes one set of readings. These materials include a mix of news articles and academic journal articles. I have chosen these materials to illustrate key course concepts that I will be discussing in the recorded videos or that we will discuss in our conference sections. Some of these materials may also inform the engagement activities you will be asked to complete.

Engagement Activities:

Each week will include one or more brief engagement activities related to the concepts discussed in the reading and listening materials and/or in the instructional videos. The goal with these engagement activities is to give you a chance to activate and demonstrate the knowledge you have gained in the class. Most often, the engagement activity will be a discussion forum post and two responses to peers' discussion forum posts for the same module.

Comprehension Checkpoints (Quizzes):

Each week will include a short quiz to evaluate your comprehension of the materials. The quizzes are required but I will not record your grades. Instead, I encourage you to use the quizzes as an opportunity to evaluate your own understanding of the course material. Quizzes will typically be due prior to your scheduled Conference Section.

Course Assignments:

You will be asked to complete 5 assignments and 1 project for this course. These assignments allow you to activate and demonstrate your understanding of the course concepts in creative and meaningful ways. I will describe these assignments in more detail as we approach their release.

Late Policy:

It is imperative that you complete the readings and watchings prior to Conference Section, otherwise you will not be able to participate. On all other deliverables for the course, late days will be allowed, provided you email me prior to the assignment deadline letting me know your assignment will be late and how many late days you require.

Expected Workload

At Williams, we operate under the course unit system (rather than the credit hour system) as the metric required by many employers, granting organizations, graduate schools, and federal agencies. In addition to the 1 hours we spend together during our conference section meeting time, you should expect to spend (on average) at least 12 hours per week on the academic and creative work related to class. If you find that you are spending considerably more (or considerably less!) time to engage with this course academically, please contact me so that we can determine the best course of action as you approach the materials. Should you have any additional questions about the relationship of course units to credit hours, refer to the Office of the Registrar, which [explains our course unit equivalency in greater detail](#).

Course Policies and Expectations

Learning Environment and Expectations:

The Williams community embraces diversity of age, background, beliefs, ethnicity, gender, gender identity, gender expression, national origin, religious affiliation, sexual orientation, and other visible and non visible categories. I welcome all students in this course and expect that all students contribute to a respectful, welcoming and inclusive environment. If you have any concerns about classroom climate, please contact me to share your concern.

Each person comes to the class with a unique background and perspective. I encourage you to draw on those perspectives when engaging with course materials and discussing them with your conference section. Please keep in mind that sharing opinions and experiences is a valuable but sometimes uncomfortable experience. Everyone must make the commitment to create an atmosphere of respect for each person's contribution. Varying points of view are welcome and expected. Please be respectful and open-minded when listening to viewpoints different from your own. If you disagree with an argument, criticize the evidence that supports a stance or the negative implications of a viewpoint; ask questions that challenge certain

assumptions; but, please do not criticize the individual who holds that view. I do not tolerate discrimination.

Digital Devices:

You will need an internet-connected digital device that can run python that you can install additional python modules onto (i.e., a laptop or desktop computer), particularly for the course assignments. In particular, [Anaconda python](#) is a useful python distribution that comes with a variety of libraries that are necessary for this class.

If you are reading this, please post a link to your favorite song about technology to the 'Random' discussion forum in Glow.

I recognize that some students are unable to afford the cost of purchasing digital devices and that other students rely on older, more problem-prone devices that frequently break down or become unusable. I also recognize that those technology problems can be a significant source of stress for students.

If you do not have access to reliable internet or a reliable, internet-connected digital device for programming, I encourage you to contact the [Dean of Students Office](#) to request assistance. If you contact me, as well, I can help you write a message to the Dean of Students and also work with you to develop a plan for completing work in this course.

If you are experiencing problems with your device or internet access, I encourage you to contact the [Office of Information Technology for support](#).

If those problems are persistent and/or interfere with your ability to complete the work for this course, please let me know.

I also encourage you to be aware of the many technology-related resources that Williams College provides:

- Free on-campus [wireless internet](#) (wifi) accessed through the “eduroam” network. (For help connecting your device to the network, visit the [OIT website](#)).
- Free software (including Microsoft Office, Adobe Creative Suite, statistical software, etc.) described on the [OIT website](#).
- Free unlimited, secure online storage through [Google Drive](#) (a great way to back up files, [Drive File Stream](#) is particularly handy for accessing your Google Drive materials offline).
- Free regular [support](#) with issues related to OIT technology (e.g., email, Glow, wifi, printing, device setup, etc.).

Basic Needs Security:

Some Williams students experience difficulties affording groceries or accessing sufficient food to eat every day. Some lack a safe and stable place to live. Some Williams students experience challenges balancing school work with paid work, childcare, and other family obligations. Those challenges can create considerable anxiety for students and may also affect students' performance in their courses. Students experiencing those challenges are urged to contact the

Dean of Students for support (online at <https://dean.williams.edu/> or by email at chaley@williams.edu or by phone at 413.597.4171). If you are experiencing challenges with food, housing, work, and/or family obligations, please notify me (ikh1@williams.edu) if you are comfortable in doing so. This will enable me to assist you in accessing support.

Family Commitments:

If you have care responsibilities for children or other family members, and if your caregiving responsibilities come into conflict with the course schedule, please don't feel as though you have to miss class. I understand that sometimes plans fall through. If this happens, you are welcome to contact me, and we can reschedule your conference section.

Support for Students Who Need Accommodations:

Students with disabilities of any kind who may need accommodations for this course are encouraged to contact Dr. GL Wallace (Director of Accessible Education) at 413.597.4672. Also, students experiencing mental or physical health challenges that are significantly affecting their academic work or well-being are encouraged to contact me and to speak with a dean so we can help you find the right resources. The deans can be reached at 413.597.4171. We will work together to ensure this class is as accessible and inclusive as possible. Also, students experiencing mental or physical health challenges that are significantly affecting their academic work are encouraged to contact me or to speak with a dean. The deans can be reached at 413.597.4171.

Academic Integrity:

Assignments and quizzes are to be the sole work of each student unless the assignment explicitly states otherwise. Students may discuss issues related to an assignment, provided that such discussions are cited in the material turned in. Any ideas, code, images, or text that is not original to the student(s) must have the original source cited, both in the code comments and in the display text. Uncredited collaborations will be considered a violation of the honor code and will be handled appropriately. For a full description of the Computer Science Honor Code, please see <https://csci.williams.edu/the-cs-honor-code-and-computer-usage-policy/> If in doubt of what is appropriate, do not hesitate to ask.

Furthermore, as your grade in this class relies on your self-reflection of your own progress, it is imperative that you are honest in your assessment of your activities for this class.

Intellectual Property:

No part of this course may be reproduced nor distributed in any manner without prior permission from the instructor. More information is available here:
<https://dean.williams.edu/student-handbook/classroom-recordings-and-use-of-class-materials/>

Course Content

The content of the topics is subject to change. However, the order of the topics will, roughly, be as follows:

Module 0: Getting Started in the Class

Why does Human-AI interaction matter? Who is this Iris person? What are the basic course logistics? What social distancing related things should I be aware of?

Module 1: Introduction to Human-AI Interaction

What is AI? What is machine learning? What is the machine learning pipeline?

Module 2: Perspectives on Human-AI Interaction

Why were there previous "AI winters"? What is the history of humans interacting with AI? Artificial Intelligence versus Intelligence Augmentation.

Module 3: Designing AI/ML User Experiences

How do we take into consideration user needs and values as we design user-facing AI systems?

Module 4: Designing for Failure

How do we design around the inevitable AI failures for our stakeholders?

Module 5: Data & Knowledge

Where does data come from and who owns it? How do we get enough data (ethically) for our AI systems?

Module 6: Visualizing Complex Predictive Data

Designing visualizations to improve user understanding of AI outputs, as well as designing visualizations to assist developers who build AI/ML systems.

Module 7: Interpreting and Explaining Algorithms

How do we explain our AI systems for sufficient user understanding so users can interrogate the system's predictions?

Module 8: AI Ethics, Fairness, Social Acceptability, and Trust

Applying Distributional justice approaches to improve fairness in AI systems.

Module 9: Humans in the Loop with Recommendation Systems

Building systems that leverage collaboration between humans and AI systems.

Module 10: Natural Language and Speech Applications

Using neural nets for conversational agents.

Module 11: Vision, Images, and Art

AI-generated imagery, GANs.

Module 12: Special Topics

Recommender Systems, continuing to study HAll, course wrap-up.