

CMSC 691: Human-AI Interaction

Fall 2026 Syllabus

Welcome to CMSC 691: Human-AI Interaction!

AI systems increasingly write, recommend, and decide alongside us. The question is no longer whether AI can do a task, but how people and AI should work together on it: who should do what, when, and under what conditions. **This course explores that partnership**, including why a model that performs well on benchmarks can still fail the people who rely on it.

You will build foundations in AI and HCI, explore what makes AI systems understandable, fair, and trustworthy. Along the way you will **read and present research papers, debate ideas with your classmates, and carry a project** from initial idea to final results.

Catalog Listing:	CMSC 691 – Human AI Interaction
Sessions:	001 – Face-to-face / 101 – Online-asynchronous
Course Level:	Graduate
Time:	3:30 - 4:45 p.m., Tuesday & Thursday
Location:	Temple 1164
Course Website:	https://xiweix.github.io/teaching/cmsc691-hai-fall26

Instructor:	Xiwei Xuan
E-mail:	xuanx[at]vcu[dot]edu
Office Hours:	Tuesdays 2:00 - 3:00 p.m. (zoom, link: https://vcu.zoom.us/j/81390727704) 4:45 - 5:45 p.m. (in-person)

COURSE OVERVIEW

Semester course. 3 credits.

This course provides an introduction to Human-AI Interaction (HAI), examining how humans and AI systems interact, collaborate, and make decisions together. Students will develop foundations in AI and HCI, study explainability, fairness, accountability, transparency, AI validation, and visualization, and complete lectures, discussions, paper presentations, and a group project that connect fundamental concepts with current research and practical applications.

PREREQUISITES AND COURSE MATERIALS

Python coding ability and a basic understanding of AI.

No required textbook; reading materials will be provided throughout the course.

COURSE GOALS

Upon successful completion of this course, students will be able to:

- Explain the fundamental concepts of AI, machine learning, generative AI, AI agents, and human-computer interaction that underlie Human-AI Interaction.
- Analyze how human factors, data, and AI design shape human-AI interaction and decision-making.
- Identify and evaluate key issues in AI explainability, fairness, accountability, and transparency.
- Assess AI systems from multiple perspectives, including the validation of models, data, and agents.
- Apply HCI principles, visualization, and visual analytics techniques to support the understanding, evaluation, and interaction with AI systems.
- Critically read, present, discuss, and evaluate research papers broadly related to Human-AI Interaction.
- Design and carry out a Human-AI Interaction project, communicate preliminary and final results, and produce a clear technical report and project deliverables.

MAJOR TOPICS

- Foundations of Human-AI Interaction
- Foundations of Machine Learning, Deep Learning, and AI
- Generative AI, Large Language Models, and Vision-Language Models
- AI Agents and Agentic AI
- Data and Its Role in AI Systems
- Human-Computer Interaction and Human Factors
- Fairness, Accountability, and Transparency (FAccT) in AI
- AI Validation: Models, Data, and Agents
- Visualization and Visual Analytics for Human-AI Interaction
- Critical Reading and Discussion of Human-AI Interaction Research
- Human-AI Interaction Project Design and Evaluation

COURSE PLATFORMS

Course Website	Syllabus, schedule, slides, recordings, etc.
Canvas	Assignment submissions, peer-review activities, grouping, and grading
Discord	Discussions, questions, and course communication
Email	Official or time-sensitive notices (Google Group: cmssc691-fall26@googlegroups.com)
Google Drive	Slides, recordings, requirement documents, and other course files (Folder: Course Files)

All students will be added to the course Google Group using their VCU email addresses. Please check your VCU email regularly.

For private matters, please email the instructor using the subject line "CMSC 691 - <topic>". Emails are typically answered on Tuesdays and Thursdays. For urgent questions, please speak with the instructor before or after class, during office hours, or add "Urgent -" to the beginning of the email subject line.

COURSE WORK

Lectures and Course Materials

Students in Section 001 attend and take part in class; students in Section 101 follow the recordings asynchronously, keeping pace with the course schedule. Both sections are expected to work through the posted readings and materials outside class.

Paper Presentation

Each student presents one paper individually, in a 10-minute presentation. Students in Section 001 present in class; students in Section 101 submit a recorded presentation and give peer feedback on two other presentations. The paper list, sign-up, and detailed guidelines are posted on 08/30.

Group Discussion (Section 001)

Two in-class group discussions. The topic and requirements for each are posted in advance.

Assignments (Section 101)

Two written assignments, each a half-page to one-page discussion of a given topic. An Overleaf template is provided.

Course Project

A semester-long group project, tentatively in teams of three; the final team size will be set once enrollment is finalized in the first week. Projects need not be limited to human-AI interaction as such — any subtopic covered in this course is acceptable. Detailed requirements are posted on 08/30.

GRADING

Face-to-face (CMSC 691 - 001)

Paper Presentation (In-Class)	25%	Presentation: 15%
		Active Participation in Q&A: 10%
Group Discussion (In-Class)	20%	Discussion 1: 10%
		Discussion 2: 10%
Course Project	55%	Midterm Project Presentation: 10%
		Midterm Project Report: 10%
		Final Project Presentation: 15%
		Final Project Report & Code: 20%

Online-asynchronous (CMSC 691 - 101)

Paper Presentation	25%	Recorded Presentation: 15%
		Peer Feedback on two presentations: 10%
Assignments	20%	Assignment 1: 10%
		Assignment 2: 10%
Course Project	55%	Recorded Midterm Project Presentation: 10%
		Midterm Project Report: 10%
		Recorded Final Project Presentation: 15%
		Final Project Report & Code: 20%

Grading Scheme

A	$\geq 90\%$
B	$\geq 80\%$ and $< 90\%$
C	$\geq 70\%$ and $< 80\%$
D	$\geq 60\%$ and $< 70\%$
F	$< 60\%$

POLICIES

Late Policy

For each submission:

- A 10-percentage-point deduction will be applied for each day a submission is late, up to a maximum deduction of 50 percentage points.
- Submissions more than five days late will not be accepted unless prior arrangements have been made with the instructor.

Attendance

Attendance is expected for students in the face-to-face section. If you must miss an in-class activity due to an excused or unavoidable circumstance, please contact the instructor as early as possible to discuss appropriate make-up arrangements. Students in Section 101 are expected to watch the course recordings asynchronously and to keep on track with the course schedule and all deadlines.

Recording

Course recordings and student presentation recordings are intended solely for students enrolled in this course. They may not be shared, reposted, or distributed outside the course in any format without appropriate permission.

Use of Generative AI

The appropriate use of generative AI tools may vary by assignment. Specific guidance will be provided for each assignment or course activity. Unless otherwise stated, every submission includes one short paragraph describing how you used generative AI, whether or not you used it. Students remain responsible for the accuracy, originality, and integrity of all submitted content. When in doubt, please ask before using an AI tool.

SCHEDULE

** This schedule is tentative and subject to change as the semester progresses **

** All deadlines are at **11:59 p.m. Eastern Time** on the specified date **

** Slides are posted after each class meeting; recordings are posted as soon as processing is complete **

- **[S-001] Students in Section 001 (face-to-face)**
- **[S-101] Students in Section 101 (online asynchronous)**
- **[A] All students (both sections)**

Week	Date	Module	Topic	Notes
1	08/18	#0 Getting Started	Welcome & Getting Started [slides] [recording]	
	08/20		Introduction to Human-AI Interaction [slides] [recording]	
2	08/25	#1 AI & HCI Fundamentals	Primer on AI: AI/ML 101 [slides] [recording]	
	08/27		Primer on AI: Generative AI, LLMs, and VLMs [slides] [recording]	08/30 [A] Paper Presentation List Posted; Sign-Up Opens 08/30 [A] Paper Presentation Guidelines Posted 08/30 [A] Course Project Requirements Posted 08/30 [S-001] Discussion 1 Topic and Requirements Posted 08/30 [S-101] Assignment 1 Topic and Requirements Posted
3	09/01		Primer on AI: AI Agents & Agentic AI; Course Project Introduction [slides] [recording]	
	09/03		Primer on AI: Data and Why Data Matters [slides] [recording]	09/06 [A] Paper Presentation Sign-Up Due
4	09/08	Group Discussion 1	Primer on HCI: HCI 101 and Why Humans Matter [slides] [recording]	
	09/10		Topic TBA[recording]	09/10 [A] Group Project Team Formation Due 09/13 [S-101] Assignment 1 Due 09/13 [S-001] Midterm Project Presentation Order Posted
5	09/15	#2 FAccT (Fairness, Accountability, and Transparency) of AI	XAI (Part 1)[slides] [recording]	
	09/17		XAI (Part 2) and AI Fairness and Accountability (Part 1)[slides] [recording]	09/20 [S-101] Assignment 1 Peer Review Due
6	09/22	Work Session	AI Fairness and Accountability (Part 2)[slides] [recording]	
	09/24		Course Project	09/27 [A] Midterm Project Report Due
7	09/29	Midterm Project Presentation (Proposal and Preliminary Results)[recording1]		
	10/01	Midterm Project Presentation (Proposal and Preliminary Results)[recording2]		
8	10/06	Midterm Project Presentation (Proposal and Preliminary Results)[recording3]		

Week	Date	Module	Topic	Notes
	10/08	#3 AI Validation	Model and Agent Validation[slides] [recording]	10/11 [S-101] Recorded Midterm Project Presentation Due
9	10/13		Data Validation[slides] [recording]	
	10/15	#4 Visualization for HAI	Visualization and Visual Analytics[slides] [recording]	
10	10/20	Paper Presentations	See the Paper Presentation List [recording]	
	10/22	Paper Presentations	See the Paper Presentation List [recording]	
11	10/27	Paper Presentations	See the Paper Presentation List [recording]	
	10/29	Work Session	Course Project	11/01 [S-001] Final Project Presentation Order Posted
12	11/03	Election Day. No class		
	11/05	Paper Presentations	See the Paper Presentation List [recording]	11/08 [S-101] Recorded Paper Presentation Due 11/08 [S-101] Assignment 2 Topic and Requirements Posted 11/08 [S-001] Discussion 2 Topic and Requirements Posted
13	11/10	Paper Presentations	See the Paper Presentation List [recording]	
	11/12	Paper Presentations	See the Paper Presentation List [recording]	11/15 [S-101] Paper Presentation Peer Feedback Due
14	11/17	Group Discussion 2	Topic TBA[recording]	
	11/19	Final Project Presentation[recording1]		11/22 [S-101] Assignment 2 Due 11/29 [S-101] Assignment 2 Peer Review Due
15	11/24	Fall Break. No class		
	11/26	Fall Break. No class		
16	12/01	Final Project Presentation[recording2]		12/04 [S-101] Recorded Final Project Presentation Due
	12/03	Final Project Presentation[recording3]		12/06 [A] Final Project Report & Code Due

OTHER IMPORTANT DATES

You can view important dates for the Fall 2026 semester in the university calendar:

https://academiccalendars.vcu.edu/AC_view.aspx?term=Fall+2026

- First Day of Class: August 18th
- Add/drop and late registration: August 18th - 24th
- Last Day to Withdraw with a “W” on the transcript: October 30th
- Fall Break: No classes held on November 24th and November 26th
- Last Class Meeting: December 3rd

VCU SYLLABUS STATEMENT

Students should visit <http://go.vcu.edu/syllabus> and thoroughly review all of the listed syllabus statement information. The full university syllabus statement includes information such as safety, registration, the VCU Honor Code, student conduct, withdrawal from courses, and more.

MENTAL HEALTH AND WELL-BEING

Your mental health and well-being are important. If you are experiencing stress, anxiety, or other challenges that may affect your academic experience, I encourage you to seek support when needed. VCU provides a variety of mental health and well-being resources for students. Please visit the [VCU Mental Health Resources](#) for available services and support.

ACCOMMODATIONS

VCU is committed to ensuring equal access to educational opportunities for students with disabilities. Students who may need academic accommodations should contact [Student Accessibility and Educational Opportunity \(SAEO\)](#). Students with approved accommodations should provide their accommodation letter to the instructor as early in the semester as possible so that appropriate arrangements can be made.

FINAL NOTES

- Attend class on time and be professional.
- Treat your classmates and the instructional team with the same respect you expect to receive.
- The most important thing is to do your best and seek help when you need it. If you have questions or encounter difficulties, please reach out early rather than falling behind.
- Work with your classmates, ask the instructor, and make use of VCU's academic support resources.

Most of all, please stay safe, and happy learning!