Course Change Request

New Course Proposal

Date Submitted: 02/12/26 2:34 pm

Viewing: **NEUR 585 : Transforming Academia with Generative AI**

Last edit: 02/13/26 9:19 am

Changes proposed by: gscott21

In Workflow

1. **NEUR Chair**
2. **SC Curriculum Committee**
3. SC Assistant Dean
4. Assoc Provost-Graduate
5. Registrar-Courses
6. Banner

Approval Path

1. 02/12/26 6:21 pm Saleet Jafri (sjafri): Approved for NEUR Chair

Are you completing this form on someone else's behalf?

Yes

Requestor:

Name	Extension	Email
Frank Krueger	3-4358	fkrueger@gmu.edu

Effective Term: Fall 2026

Subject Code: NEUR - Neuroscience

Course Number: 585

Bundled Courses:

Is this course replacing another course? No

Equivalent Courses:

Catalog Title: Transforming Academia with Generative AI

Banner Title: Transform Academia w/AI

Will section titles vary by semester? No

Credits: 3

Schedule Type: Lecture

Hours of Lecture or Seminar per week: 3

Repeatable: May only be taken once for credit (NR)
GRADUATE ONLY

Default Grade Mode: Graduate Regular

Recommended Prerequisite(s):
Completion of 60 credits, including BIOL 213 or equivalent.

Recommended Corequisite(s):

Required Prerequisite(s) / Corequisite(s) (Updates only):

Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?

Registration Restrictions (Updates only):

Registrar's Office Use Only - Registration Restrictions:

Field(s) of Study:

Class(es):

Level(s):

Degree(s):

School(s):

Catalog Description:
This course comprehensively explores how generative AI technologies reshape academic research, writing, and communication. Through interactive readings, weekly mini-projects, tool-based assignments, and ethical discussions grounded in science fiction narratives from AI 2041, students will gain hands-on experience with cutting-edge AI tools such as ChatGPT, Litmaps, SciSpace, Gamma, and more. By the end of

the course, students will be equipped to critically assess and creatively integrate AI into their scholarly workflows, preparing them for success in an academic future shaped by rapid innovation.

Justification:

What: Creating a new course

Why: The course emphasizes technological fluency and ethical literacy, guiding students to apply AI effectively, responsibly, and academically rigorously. It will prepare students for post-graduation employment as today's employers expect new graduates to use AI ethically and to improve work efficiency. As AI continues to garner interest and change the employment landscape, this course is a complement to course offerings in the College of Science.
IPN will submit a request for an undergraduate version of this course for crosslist. We have offered this course under a special topic heading since Fall 2024 and received steady enrollment and excellent student evaluations for content.

Does this course cover material which crosses into another department? No

Learning Outcomes:

1. Critically assess the role of generative AI in academic settings, including its potential benefits, limitations, and ethical implications across
diverse research and educational contexts.
2. Effectively apply various AI tools to enhance academic activities such as literature reviews, writing, data visualization, and presentation, while
maintaining academic integrity.
3. Communicate insights through ethically grounded discussions and multimodal projects that blend traditional academic formats with AIenhanced methods.
4. Reflect on AI’s societal impact, drawing connections between science fiction, real-world AI developments, and the future of scholarly work.

Will this course be scheduled as a cross-level cross listed section?

Attach Syllabus

Syllabus_Trans_Acad_Gen AI_(NEUR592_NEUR461_BINF739)_Fall_2025_v1_08_19_25_v1.pdf

Additional Attachments

Staffing:

Dr. Frank Krueger

Relationship to Existing Programs:

Crosslisted with SSB (BINF 739)

Relationship to Existing Courses:

N/A

Have you reached out to the Libraries to determine whether there are adequate resources to support your course? If not, please email Meg Meiman, Associate University Librarian for Learning, Research, and Engagement at mmeiman2@gmu.edu.

No

Additional Comments:

Reviewer Comments

Key: 19246

Syllabus

Transforming Academia with Generative AI

NEUR 585

Fall Semester 2026

Course Organization

Weekly schedule: Each week runs from Monday (12:01 am) to Sunday (11:59 pm), starting August 25, 2025

Instructor: Frank Krueger, Ph.D.

Department: School of Systems Biology

Phone: 703-993-4358

E-mail: fkrueger@gmu.edu (preferred)

Office Hours: By appointment (via Zoom)

Course Description

This asynchronous online course comprehensively explores how generative AI technologies reshape academic research, writing, and communication. Through interactive readings, weekly mini-projects, tool-based assignments, and ethical discussions grounded in science fiction narratives from *AI 2041*, students will gain hands-on experience with cutting-edge AI tools such as ChatGPT, Litmaps, SciSpace, Gamma, and more. The course emphasizes technological fluency and ethical literacy, guiding students to apply AI effectively, responsibly, and academically rigorously. By the end of the course, students will be equipped to critically assess and creatively integrate AI into their scholarly workflows, preparing them for success in an academic future shaped by rapid innovation.

Learning outcomes

By the end of this course, students will be able to:

1. **Critically assess** the role of generative AI in academic settings, including its potential benefits, limitations, and ethical implications across diverse research and educational contexts.
2. **Effectively apply** various AI tools to enhance academic activities such as literature reviews, writing, data visualization, and presentation, while maintaining academic integrity.
3. **Communicate insights** through ethically grounded discussions and multimodal projects that blend traditional academic formats with AI-enhanced methods.
4. **Reflect on AI's societal impact**, drawing connections between science fiction, real-world AI developments, and the future of scholarly work.

Prerequisite

Prerequisites are the completion or concurrent enrollment in all other required general education courses or permission of the instructor. This course is essential for anyone interested in the rapidly developing field of generative AI in academic contexts. Major components of the course include reading current literature, conducting AI-assisted research projects, creating AI-enhanced academic outputs, and engaging in collaborative discussions on AI ethics.

Textbook & Course Materials

Required Text, Recommended Texts, and Other Readings

- Readings will be made available on Canvas (See Learning Modules).

Course Logistics

This course will use a distance learning format; the primary meeting space will be on Canvas; and we will use other means of keeping in touch such as e-mail, telephone, and Zoom. This is a rigorous course: you will accomplish the following activities in a typical week:

- Reading about 35-50 pages, reflecting the content, and discussing the material with your classmates,
- Completing online activities and responding to weekly requirements, and
- Working on assignments completing in Canvas according to the assignment schedule.

Though the delivery method is different, it should take you the same amount of time as a typical full-semester course. You should **expect to spend approximately 9 hours on coursework each week** (including the time you would have spent in a classroom). It is critical to keep up with weekly requirements. Each week, I will provide announcements via e-mail and a module in our Canvas course to specify required activities and assignments (available by clicking on 'Modules' on the course menu in Canvas).

Canvas (Available on August 25, 2025)

We will use Canvas for the course. Additional guidance on individual assignments and discussion questions will be posted there. All assignments will be submitted through Canvas for grading. Please visit our Canvas site regularly.

Access Canvas by following these steps:

1. Go to http://mymason.gmu.edu.
2. Log in using your NETID and password.
3. Click on the 'Dashboard' tab.
4. Click on 'Transforming Academia with Generative AI (NEUR 461| PSYC 461 | BIOL 508).

Instructor-Student Communication

I will respond to your e-mails from Monday (9 am) through Friday (6 pm) within 24 hours. If I am away from e-mail for more than two days, I will send an announcement to the class.

Before sending an e-mail with questions, please check the following (available on your Canvas course menu) **unless the e-mail is of a personal nature**:

1. Syllabus.
2. Tutorials on how to use Canvas features.
3. Canvas Q&A (resources specific to Mason).
4. Technology Requirements.

Mason E-MAIL

- Mason requires that the Mason e-mail be used for all courses. I will be sending messages to your Mason e-mail, and you are responsible for ensuring you have access to these messages.
- You may forward your Mason e-mail to other accounts but always use your Mason e-mail when communicating with me to verify your identity.
- You must regularly check your Mason e-mail account and keep your mailbox maintained so that messages are not rejected for being over quota.
- When you e-mail me, you can expect a response within 24 hours (*Monday through Friday*). If I am going to be away from e-mail for more than two days, I will send an announcement to the class.
- When you e-mail me, be sure to include '**Academia & AI'** at the beginning of the subject heading to alert me that I have received a message from one of my online students.

Participation

Netiquette For Online Discussions

Our discussion should be collaborative, not combative; you create a learning environment, share information, and learn from one another. Respectful communication is essential to your success in this course and as a professional. Please re-read your responses carefully before you post them so others will not take them out of context or as personal attacks. Be positive to others and diplomatic with your words, and I will try my best to do the same. Be careful when using sarcasm and humor. Without face-to-face communication, your joke may be viewed as criticism. Experience shows that even an innocent remark in the online environment can be easily misconstrued.

Netiquette prepared by Charlene Douglas, Associate Professor, College of Health & Human Services, GMU.

Technology Requirements

Technology requirements for the course are:

- Internet connection (DSL, LAN, or cable connection desirable).
- Supported Web browser (e.g., Internet Explorer, Chrome, Safari) to use Adobe Connect for Live Class Sessions.
- MS Office 365 ProPlus is provided at no cost via the Microsoft Student Advantage Program (Access is tied to your @gmu.edu e-mail address).

Student Responsibilities

Mason E-mail

Students are responsible for the content of university communications sent to their George Mason University e-mail account and are required to activate their account and check it regularly. For accessibility and privacy, the university, school, and program will send communications to students solely through their Mason e-mail account —students should respond accordingly.

Patriot Pass

Once you sign up for your Patriot Pass, your passwords will be synchronized, and you will use your Patriot Pass username and password to log in to the following systems: Canvas, University Libraries, Mason E-Mail, myMason, Patriot Web, Virtual Computing Lab, and WEMS. [See]

AI Guidelines

These resources provide a framework and guidance for the responsible and ethical use of AI across our academic community. [See]

Students with Disabilities

Students with disabilities who seek accommodations in a course must register with the George Mason University Office of Disability Services (ODS) and inform their instructor in writing at the beginning of the semester. [See]

Academic Integrity

Students must be responsible for their work, and students and faculty must take on the responsibility of dealing explicitly with violations. The tenet must be the foundation of our university culture. [See]

Honor Code and Virtual Classroom Conduct

Students must adhere to the guidelines of the George Mason University Honor Code. [See]

University Policies

Students must follow university policies (University Policies).

Responsible Use of Computing

Students must follow university policies. [See]

University Calendar

Details regarding the current Academic Calendar [See].

University Catalog

The current university catalog [See].

Student Services

Writing Center

The George Mason University Writing Center staff provides various resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing. ESL Help: The program was designed specifically for students whose first language is not English who feel they might benefit from additional, targeted support throughout the semester [See].

University Libraries

University Libraries provide resources for distance students [See].

Counseling and Psychological Services

The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counselors, clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops, and outreach programs) to enhance students' personal experience and academic performance [See].

Family Educational Rights and Privacy Act (FERPA)

The Family Educational Rights and Privacy Act of 1974 (FERPA), or the 'Buckley Amendment,' is a federal law protecting student educational records and providing students with certain rights. [See].

Weekly Schedule

Distance learning courses are dynamic—to ensure we achieve our learning outcomes— we may need to negotiate weekly schedule changes. We will focus on learning, fairness, and reason for any approved changes. Each week's activities —reading assignments about topics, watching videos, defining key concepts (via a glossary), sharing and discussing your knowledge with classmates (via discussion forum); and completing assignments to build the AI toolbox— **require approximately 9 hours.**

Note that this course has no final exam, but students complete a project using the developed AI Toolbox during the exam week. The table below lists the weekly schedule, significant activities, significant assignments, points, and due dates for this course. Final grades will be based on the total points earned in the class.

Week	Major Topics and Methods	Assignments (graded)	Points	Due Dates (11.59 pm, EST)
Week 1		Orientation Quiz	5	Sunday, 8/31
Monday, August 25		Self-Introduction	10	
—	AI Foundations: A Brief History	Topic: Glossary	10	Thursday, 8/28
Sunday, August 31	AI Ethical Focus: Harnessing AI for Good	Topic: Discussion (Part 1)	10	
		Topic: Discussion (Part 2)	10	Sunday, 8/31
	AI Phase 1: Discovery & Idea Generation: Tool: ChatGPT - Prompt Pro	Project: Prompt Engineering Challenge	20	
Week 2	AI Foundations: Generative Models	Topic: Glossary	10	Thursday, 9/4
Monday, September 1	AI Ethical Focus: AI Einsteins and Human Expertise	Topic: Discussion (Part 1)	10	
—		Topic: Discussion (Part 2)	10	Sunday, 9/7
Sunday, September 7	Phase 1: Discovery & Idea Generation: Litmaps - Literature Mapper	Project: Literature Map Challenge	20	
Week 3	AI in Academia: Applications & Impact	Topic: Glossary	10	Thursday, 9/11
Monday, September 8	AI Ethical Focus: Accountability in AI Hallucinations	Topic: Discussion (Part 1)	10	
—		Topic: Discussion (Part 2)	10	Sunday, 9/14
Sunday, September 14	Phase 1: Discovery & Idea Generation: Perplexity - Research Scout	Project: Rapid Review Challenge	20	
Week 4	AI in Practice: Deep Learning	Topic: Glossary	10	Thursday, 9/18
Monday, September 15	AI Ethical Focus: The Golden Elephant - Data privacy and control	Topic: Discussion (Part 1)	10	
—		Topic: Discussion (Part 2)	10	Sunday, 9/21
Sunday, September 21	Phase 1: Discovery & Idea Generation: Elicit - Evidence Finder	Project: Evidence Matrix Challenge	20	
Week 5	AI in Practice: Computer Vision	Topic: Glossary	10	Thursday, 9/25
Monday, September 22	AI Ethical Focus: The Golden Elephant - Deepfakes	Topic: Discussion (Part 1)	10	
—		Topic: Discussion (Part 2)	10	Sunday, 9/28
Sunday, September 28	Phase 2: Deep Analysis & Writing: SciSpace - AI Analyst	Project: Research Breakdown Challenge	10	
Week 6	AI in Practice: Natural Language	Topic: Glossary	10	Thursday, 10/2
Monday, September 29	AI Ethical Focus: Twin Sparrows - Identity shaping	Topic: Discussion (Part 1)	10	
—		Topic: Discussion (Part 2)	10	Sunday, 10/5
Sunday, October 5	Phase 2: Deep Analysis & Writing: Paperpal - Precision Writer	Project: Polished Paragraph Challenge	20	

Week 7	AI in Practice: Robotics	Topic: Glossary	10	Thursday, 10/9
Monday, October 6	AI Ethical Focus: Contactless Love - Human-machine intimacy	Topic: Discussion (Part 1)	10	
—		Topic: Discussion (Part 2)	10	Sunday, 10/12
Sunday, October 12	Phase 2: Deep Analysis & Writing: Grammarly - Style & Clarity Coach	Project: Academic Reframing Challenge	20	
Week 8	AI in Practice: X-Reality (VR/AR/MR)	Topic: Glossary	10	Thursday, 10/16
Monday, October 13	AI Ethical Focus: My Ha - Identity	Topic: Discussion (Part 1)	10	
—		Topic: Discussion (Part 2)	10	Sunday, 10/19
Sunday, October 19	Phase 2: Deep Analysis & Writing: Consensus - Evidence Engine	Project: Fact-Check Challenge	20	
Week 9	AI in Practice: Autonomous Systems	Topic: Glossary	10	Thursday, 10/23
Monday, October 20	AI Ethical Focus: The Holy Driver - Accountability	Topic: Discussion (Part 1)	10	
—		Topic: Discussion (Part 2)	10	Sunday, 10/26
Sunday, October 26	Phase 3: Communication & Creativity: Gamma - Structure Master	Project: AI Timeline Challenge	20	
Week 10	AI in Practice: Quantum Computing	Topic: Glossary	10	Thursday, 10/30
Monday, October 27	AI Ethical Focus: Quantum Genocide - Singularity	Topic: Discussion (Part 1)	10	
—		Topic: Discussion (Part 2)	10	Sunday, 11/2
Sunday, November 2	Phase 3: Communication & Creativity: Image Generator - Visual Creator	Project: Ethics Poster Challenge	20	
Week 11	AI & Society: Work & Displacement	Topic: Glossary	10	Thursday, 11/6
Monday, November 3	AI Ethical Focus: The Job Savior - Re-skilling	Topic: Discussion (Part 1)	10	
—		Topic: Discussion (Part 2)	10	Sunday, 11/9
Sunday, November 9	Phase 3: Communication & Creativity: Voice Clone - Digital Speaker	Project: Voice Explainer Challenge	20	
Week 12	AI & Society: Well-being & Happiness	Topic: Glossary	10	Thursday, 11/13
Monday, November 10	AI Ethical Focus: Isle of Happiness - Value of Money	Topic: Discussion (Part 1)	10	
—		Topic: Discussion (Part 2)	10	Sunday, 11/16
Sunday, November 16	Phase 4: Collaboration & Integration: AI Avatar - Avatar Director	Project: Avatar Q&A Challenge	20	
Week 13	AI & Society: Abundance & Plenitude	Topic: Glossary	10	Thursday, 11/20
Monday, November 17	AI Ethical Focus: Dreaming of Plenitude - Wellbeing	Topic: Discussion (Part 1)	10	
—		Topic: Discussion (Part 2)	10	Sunday, 11/23
Sunday, November 23	Phase 4: Collaboration & Integration: Fireflies - Meeting Memory	Project: Collaboration Recorder Challenge	20	

Monday, November 24 - Sunday, November 30	Thanksgiving Break			
Week 14 Monday, December 1 — Sunday, December 7	AI Futures: Call to Action AI Ethical Focus: The Dawn of AI Atlantis Phase 4: Collaboration & Integration: Google NotebookLM - AI Integrator	Topic: Glossary Topic: Discussion (Part 1) Topic: Discussion (Part 2) Project: Research Synthesis Challenge Course Evaluation	10 10 10 20 15	Thursday, 12/4 Sunday, 12/7
Exam Week Monday, December 8 — Sunday, December 14	Phase 5: Final IntegrationFusionFit Challenge	Project: Final Integration Project Tool Mastery Bonus Final Reflection Portfolio	85 15 20	Sunday, 12/14
			Total **800**	

Grading Scale (points)

Final grades for this course will be based on the percentage of total points earned, calculated from a core total of **800 points**. In addition to the required weekly assignments, you can earn up to **50 extra points** through optional activities. These include a *Tool Mastery Badges (15 points)*, *Final Reflection Portfolio (20 points)*, and submission of your *GMU course evaluation (15 points)*. While not required, these bonus points can help boost your final grade, compensate you for missed work, or even move you into a higher-grade bracket. Your final grade will be determined solely based on the 500-point core, and any extra credit will be added on top. As a result, earning more than 100% is possibly a meaningful reward for students who go above and beyond. These opportunities are a chance to enrich your experience, reflect deeply, and demonstrate your full engagement with the course.

Letter Grade	Percentage	Points	Performance
A^+	98-100%	784-850+	Superb Work
A	93-97%	744-784	Excellent Work
A^-	90-92%	720-743	Nearly Excellent Work
B^+	87-89%	696-719	Very Good Work
B	83-86%	664-695	Good Work
B^-	80-82%	640-663	Mostly Good Work
N/A	<80%	<640	Failing Work