Defining "OK" and "No Way" uses for the preservation of academic and research integrity when using generative AI in written documents for graduate degree progression and conferral in Horticulture and Crop Science (HCS)

What Written Works Are Covered?

- Research Proposals: Text document and slide deck prepared by graduate students (Master's student in Plan A and PhD students) for presentation at student's colloquia within HCS 7890.
- PhD Candidacy Exam (Written Portion): A critical evaluation of a PhD candidate's knowledge, creativity, and critical thinking. Generative AI use is regulated through an agreement between the student and the Student Advisory Committee (SAC). Under certain circumstances, the PhD candidacy exam can serve as an MS degree exam in the academic progression.
- Theses/Dissertations: For M.Sc. theses and PhD dissertations, including individual chapters, the permitted use of generative AI is defined through agreements between the student and their SAC (or dissertation committee, when additional examiners are involved).
- Written work (e.g. final reports, fact sheets, etc.) that the advisor and/or SAC consider as a partial fulfillment to earn a terminal degree.

Why This Matters:

Written documents in our program serve as milestones that not only mark degree progression but also as demonstrations of a student's ability to think critically, communicate clearly, while maintaining academic integrity. Unapproved or excessive reliance on generative AI undermines these core competencies and can compromise the reliability of scientific communication.

As a department, we have goals for our students who complete a graduate degree, including an ability to:

1. Demonstrate scientific competence in horticultural and/or agronomic sciences
2. Use appropriate forms of communication effectively at a professional level

Written documents in pursuance of a graduate degree in HCS provide evidence of student's performance and help the faculty determine how well and in what ways the students are progressing towards these goals. For instance, by the time a PhD student is working through their candidacy exams, we would like the student to be able to develop original and sound scientific experiments, critique scientific information, and integrate and apply knowledge from various sources at a high level. We would also expect the student to communicate effectively and professionally both in writing and orally. The candidacy exam tests these abilities.

This policy aims to provide basic guidance to students, advisors, student advisory committees (SAC), as well as examination and dissertation committees involved in the review of a graduate student's written works. The intention is that everyone is on the same page, and the student is clear about the expectations for this aspect of academic and research integrity in the pursuit of a graduate degree.

What is the basis for the use of generative AI?

Based on the guidelines on Student Misconduct provided by the Office of Academic Affairs at OSU: "… students are not to use unauthorized assistance in the laboratory, on field work, in scholarship

or on a course assignment."— HCS extends these principles to all written documents for degree progression and conferral. Use of generative AI is allowed only if explicitly authorized by the relevant oversight body at each stage:

- Research Proposals: authorized by the graduate advisor.
- PhD Candidacy Exam: authorized through an agreement between the student and the SAC.
- Theses/Dissertations and Manuscripts: authorized through an agreement between the student and their SAC or dissertation committee, as corresponds.

In all cases, the SAC of the student is permitted to verify compliance (e.g., via oral follow-ups or the use of AI-detection tools). Any suspicion of violation will be referred to the HCS Chair, who will then direct the process to the appropriate disciplinary bodies.

At any point, the student is encouraged to consult with the advisor, SAC, or dissertation committee if they have any questions about permissible uses of generative AI tools.

Why do we need to define "red lines" or "no way"?

We delineate forms and use of generative AI that are allowable to preserve academic and research integrity as paramount of scientific inquiry. There are two core principles that govern the preparation of written documents for graduate degree progression and graduate degree conferring regarding the use of generative AI:

- **Cognitive dimension**: Written works are a demonstration of the student's ability to synthesize knowledge, think critically, and generate original ideas. Working with generative AI can reduce the student's ability to think clearly and critically using their own knowledge base. While generative AI can also facilitate and enhance creativity and originality—rather than hinder—critical thinking, it should not replace the need to be creative or original on one's own. Reliance on generative AI that substitutes for this process undermines the educational mission of a graduate degree and harms the merit of earning a graduate degree.
- **Ethical dimension**: Students should not present the work of someone/something else as their own. Students using AI should be transparent about their use and ensure that it aligns with academic integrity. Any use of generative AI must not mask the student's own intellectual contribution. Generative AI output already meets an academic definition of plagiarism.

Therefore, the faculty in HCS has agreed to provide explicit and transparent guidelines for use of generative AI, in line with OSU policies, such as: Institutional Data and Research Data, as well as considerations regarding performing Secure Research and Institutional Data Use by Service and Activity, and the Security and Privacy Statement on Artificial Intelligence

What AI tools are authorized by OSU?

Users planning to use AI tools should limit to only those tools approved by OSU. To check which generative AI tools are authorized by OSU, review: https://ai.osu.edu/faculty-staff-students/approved-ai-tools for an up to date list and description of permitted tools.

So, what are the "No ways"?

Below, we show examples in which violation of OSU policies regarding academic and research integrity are obvious, will not be tolerated, and will immediately be referred to Committee on Academic Misconduct and Office of Research Compliance. It is advisable that students are current with the annual Institutional Data Policy training provided by OSU prior to presentation, examination, and preparation od written documents.

1. ***Unauthorized AI-Generated Content:***

Direct Submission: If a student uses generative AI (e.g., Microsoft Copilot, ChatGPT, Bard, Claude, etc. similar and derivatives) to produce answers—in any part—and submits that content as their own work without explicit, prior authorization.

Minimal Editing Mask: Slightly modifying generative AI outputs to disguise their origin, rather than engaging in original analysis, is also prohibited. All writing must have sources for any quoted text cited, as well as citations for the sources from which ideas were gleaned.

2. Plagiarism Through Generative AI Assistance:

Non-Attribution of Generative AI Contributions: Presenting content generated by an AI tool as completely self-derived without any acknowledgment, even if the student has "rephrased" or "adapted" the content.

Inadvertent Reuse of Generative AI's Cited Material: Incorporating verbatim or near-verbatim passages from AI outputs without proper, verified, and validated citation.

3. ***Fabrication or Falsification of Data and Analysis***:

Artificial Data Generation: Using generative AI to generate data sets, complete code for statistical analysis, or research findings that the student then presents as results of their own reasoning or experiments. Generation of a simulated/hypothetical data set for the purpose of testing an analysis pipeline is permissible as long as the simulated nature of the data is disclosed and any results presented are clarified to be the result of this simulation. Simulated data produced through generative AI and presented as a real dataset from which conclusions on an experiment are drawn is considered falsification and prosecuted by Committee on Academic Misconduct and Office of Research Compliance.

Manipulated Interpretation: Relying on generative AI to "create" novel interpretations or conclusions without grounding them in the student's own understanding or verifying them through rigorous academic inquiry.

4. ***Unauthorized Disclosure of Sensitive Information***:

Uploading Unauthorized and Sensitive Materials: Entering exam questions, data considered confidential under OSU's Institutional Data Policy, or other proprietary/institutional information into a generative AI platform, potentially violating privacy, security, and institutional policies. See link to list of OSU allowed AI tools above.

External Data Sharing: Using AI platforms that retain data or share exam-related details on public forums, which could lead to unauthorized dissemination of exam content or sensitive data.

5. ***Circumvention of the Critical Thinking Process***:

Delegating Intellectual Work: Relying primarily on generative AI tools to solve problems or answer questions that are specifically designed to assess an exam candidate's or student's independent reasoning and problem-solving skills.

Substituting Original Analysis: Presenting generative AI-derived answers without personal interpretation or synthesis, thereby misrepresenting the student's own intellectual contribution.

6. ***Unauthorized Collaborative Use of AI***:

Group-Based AI Consultation: Coordinating with peers or using communal AI tools during the individual exam, even if the output is later individually refined. This use violates the principle of individual demonstration of competency.

Third-Party Input: Seeking or incorporating AI-generated responses from unauthorized external experts or online communities during examination, such as the candidacy exam.

Alright, are there any "OK" uses of generative AI in written works for degree seeking?

There are cases in which the use of generative AI may be permissible; however, there are two core principles to always follow: **prior authorization** and **full disclosure**. By completing this "AI Form" with the advisor, SAC, or appropriate exam committee, the allowable use(s) of generative AI are **prior authorized**. The "AI Form" should be filled out and signed at the beginning of the semester in which the student starts formulating the research proposal, writing their candidacy exams, or writing their thesis or dissertation. Therefore, there will be multiple submissions of the form. If any generative AI assistance is used during the process of developing written documents for graduate degree progression and conferral, it must be **fully disclosed**. Disclosure would include clear documentation of what was generated by AI and how the student contributed to its final work.

Minimal, widely available AI tools for basic proofreading or spell-checking—if not generating new content—do not require the same level of disclosure as tools used for substantive contributions. Core intellectual content must always originate from the student. In addition, the student must be prepared to explain and defend their work during colloquium, the oral portion of the candidacy exam (in the case of PhD), and defense of thesis/dissertation. Examiners are encouraged to probe any work that deviates from the student's expected style or level of knowledge, and document concerns before and after probing.

Based on OSU's policies and the current guidelines on academic integrity and research misconduct, the following uses of generative AI could be considered permissible during the preparation and submission of documents for degree progression and conferring—provided they do not compromise the originality of the ideas, and that the student's own critical thinking remains front and center:

- ***Proofreading and Grammar Enhancement:***

Language Polishing (for basic proofreading, spelling, and punctuation) is acceptable provided that substantive content is not generated by generative AI. (Note: Tools used solely for mechanical tasks do not require full disclosure). Summarization is not allowed in this context.

- ***Formatting and Citation Assistance:***

AI may be used for document formatting and citation checks, as long as the substantive intellectual content remains unaltered.

- ***Drafting of figures and diagrams:***

For the design of figures, the capabilities of generative AI may be used to draft preliminary but not final figures to illustrate and convey complex processes or concepts. The prompt used for the development of such figures should be saved and stated along with the figure, and the final figure must be polished, vetted, and improved solely by the student under the advice of authorizing bodies. However, the student is always responsible for verifying that the draft figures used to developed custom and final figures are factually correct, appropriately represent the data, and do not infringe any copyright.

- ***Debugging Assistance:***

For tasks involving computer programming or statistical analysis, generative AI may provide suggestions for debugging the code and make it workable. However, the core goal or purpose, core functions, structure, syntax, and design must be designed by the student. The student must both validate (i.e., the intended analysis is what is being conducted) and fully understand any code used. Generative AI may be used with purposes of optimization or generalization of code under the supervision of the advisor and/or SAC, examination, or committee members.

The advisor, SAC, and thesis/dissertation committees may provide authorization for other uses of generative AI, which during the preparation of these guidelines were considered a "slippery slope." These uses may be authorized according to the student's context, which must be fully disclosed and delivered to the advisor and corresponding committee. The uses may include but not limited to: Translation and Language Assistance, Organizational and Structural Support, Syntax and Development of Programming Code, and Basic Research and Information Collection. Such authorization must be clearly stated and agreed prior to preparation of documents in "AI Form".

Uncontrolled exposure to AI tool products

Given the pervasive integration of AI into everyday software (e.g., in web browsers or search engines), unintentional exposure to AI-generated products may occur. Advisors and examiners are advised to provide explicit guidance and actionable technical measures —such as proctoring, disabling wireless connections, or using paper exams —to mitigate uncontrolled exposure that might inadvertently trigger a "No Way" scenario, particularly in examination processes. SAC and thesis/dissertation committees may provide additional suggestions to prevent this type of exposure, and document them in the standardized form developed for this purpose.

Final remarks:

These guidelines are subject to periodical revision as generative AI technologies and University policies evolve. The HCS Graduate Studies Committee will update them as necessary.

Any questions regarding this policy should be directed to the HCS Graduate Studies Committee.