USE OF AI MODELS IN STUDY AND TEACHING
### RECOMMENDATIONS FOR INSTRUCTORS

Based on experiences gained since 2023 with AI models in higher education, the university reinforces its recommendation to integrate these tools as broadly as possible into teaching and to encourage their use by both instructors and students.

General Assesment

ChatGPT is a particularly popular version of an AI-based chatbot. The service is available at https://chat.openai.com/chat. Technically, ChatGPT is based on a Large Language Model (LLM), of which many versions are now available. In the higher education context, it is especially significant that these models can generate high-quality texts in a question-and-answer format. This also applies to the generation of program source code. The recommendations outlined below therefore explicitly apply to both traditional written texts and program code.

We initially use ChatGPT as an example representing the rapidly developing group of (text and image) AI models that increasingly form the basis of many different programs and services.

For example, one can ask ChatGPT to introduce itself:
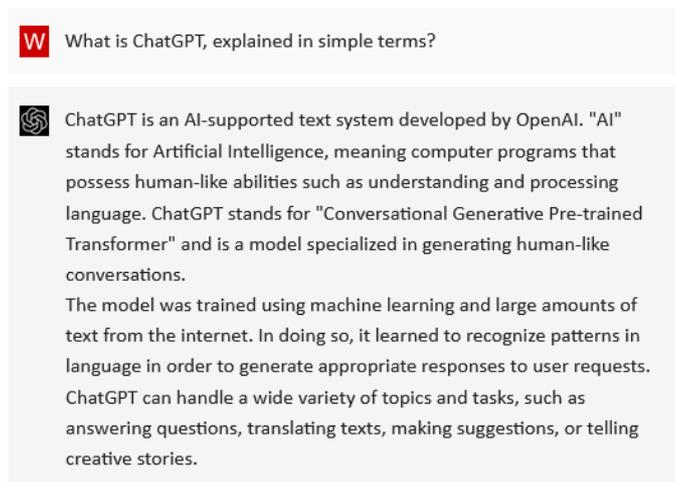
The capabilities of current AI chatbots are so powerful that they can "answer" many questions from typical bachelor-level exams at the performance level of an average student.

Texts generated by AI chatbots are so similar to those written by humans that their use can hardly be detected through automated identification methods such as plagiarism software. Even for readers, distinguishing them is already difficult today and will likely become nearly impossible in the foreseeable future. LLMs will therefore change learning and teaching. The availability of AI tools also affects which competencies will be required in future professional life.

However, LLMs do not guarantee that the texts generated by the system are accurate. On the contrary, the system has also been trained on misinformation and reproduces it. Completely false and fabricated information can be presented convincingly:

In the academic context, it is also relevant that LLMs not only fabricate facts but may also "invent" sources and present them in the same format as real references. Listed literature references, including authors' initials, journal names, volume numbers, page numbers, etc., may be entirely fabricated. It is therefore the particular responsibility of users to carefully consider how LLM-generated texts are used.

The performance of AI language models is increasing rapidly, and extensive feedback will further accelerate this process. At present, it is still unclear how far the capabilities of these systems will extend. A strategy for dealing with AI-supported systems must therefore not rely on the current limitations of these systems but must adopt a fundamental position. Developments observed in the context of Wikipedia have shown that the use of such systems cannot and should not be prevented or prohibited. On the contrary, the University of Göttingen understands AI models as tools that are to be used, and for whose intelligent application students and instructors must acquire competencies. A prerequisite for this is transparency: all parties must disclose the extent to which LLMs were used.

Recommendations for Action

Due to the rapid development of AI systems, the following recommendations can only be provisional. Language-based AI models will, sooner or later, significantly influence many areas of society, making it essential for us as a university to repeatedly engage with both opportunities and risks.

Teaching

The intelligent use of AI systems offers opportunities but also presents certain risks for university teaching. A central goal in dealing with AI systems should be the acquisition of user competencies. These include, for example:

- Understanding how AI systems function in general, which societal biases are or may be present in training data, how these are reproduced by AI, and how to address this in research and teaching.

- Knowing which AI models can be used in which contexts.

- Competence in assessing relevant aspects of data protection, personal rights, and copyright in AI use, as well as understanding the difference between self-hosted models (e.g., chat-ai.academiccloud.de via GWDG) and external models (e.g., ChatGPT by OpenAI).

- Recognizing the relationship between the formulation of a question and the AI model's response, and developing the ability to optimize prompts for the desired level of detail.

- Recognizing the limits, relevance, and implications (values) of AI-generated answers.

Developing competence for critical and responsible engagement with AI systems must become an integral part of teaching at our university. Competency orientation has long been central to higher education teaching and requires particular attention in the context of AI systems.

The following recommendations serve this objective:

1. **Consistent culture of transparency:** The use of AI models should be openly communicated by instructors and students.

2. **Integration into teaching:** AI models can be integrated into teaching and learning processes in discipline-specific ways. Good-practice examples should be shared across departments.

3. In subjects where producing original texts, images, or music is a core objective, AI systems should be actively integrated into the creative process and supported dialogically. Abandoning written work is not advisable.

4. Where text production is more a medium than a primary learning objective, AI-supported text generation may create space for focusing on evaluation skills and reflection.

5. AI systems have increased learners' responsibility for their own success. This can be supported by offering voluntary, regular progress checks (without AI).

6. Although AI use is generally encouraged, differentiated approaches may sometimes be didactically appropriate. Students must have clarity about the rules governing AI use, which must be discussed at the beginning of the semester.

7. GWDG provides all university members with a portfolio of AI services, including a chatbot (ChatAI), offering access to both self-hosted and external models. These services should be introduced to students at the beginning of the semester.

Examinations

In unsupervised examinations (e.g., term papers, essays), students have access to AI text models. Prohibiting their use is neither advisable nor practical. Meaningful use of such tools is part of prior education and future professional life, and responsible use in accordance with good scientific practice should therefore also be part of assessment. At the same time, independent academic performance must be ensured.

Recommendations:

- In supervised exams (e.g., written exams, oral exams), AI tools are not permitted unless explicitly allowed.

- In unsupervised exams:

    1. AI models should generally be permitted as aids.

    2. Their permissibility ends where AI-generated content is not transparently declared.

    3. AI use must be transparent. Students should explain how AI tools were used (see Appendix 2).

    4. Alternatively or additionally, a methodology section may be introduced in which all tools used are described.

    5. If AI competencies are not a direct assessment objective, transparent AI use should neither positively nor negatively affect grading.

    6. Examination formats should be adapted to ensure independent performance can be assessed even with AI use.

    7. AI use rules must be discussed at the beginning of the semester.

    8. Independent work changes when AI is used. Text passages developed via dialogue with an LLM may still constitute independent performance if critically evaluated and properly referenced.

All study commissions and deans of studies should review these recommendations in light of their disciplines and adapt them accordingly, with special attention to examination formats.

Curricular Development

Beyond integrating AI into individual courses, curricular development should address:

- Media and IT competencies

- Language and text competencies

- Evaluation and reflection competencies

- Methodological competencies and good scientific practice

Further Steps

Further refined recommendations for instructors and students will be developed, but these too will remain provisional.

Overall, the aim is to integrate AI models into academic contexts while ensuring their responsible and reflective use.

Appendix 1: Checklist for Instructors

The externally provided checklist supports adapting courses in the context of AI, including examination design.

Appendix 2: Guiding Questions for Transparency in AI Use in Examinations

This template provides guidance for transparency in AI use in independently completed written examination work, especially final theses. Students should explain how AI tools were used.

Additional examples are provided separately for orientation. Only relevant questions should be answered.

Specific disciplinary regulations may apply. In some subjects, declarations may be made in a separate document; in others, details are included in the methodology section. Instructors will clarify requirements.

Questions:

1. How was AI used in idea development?
2. How was AI used in working with literature and sources?
3. How was AI used in the scientific writing process?
4. How was AI used in methodology and particularly in data collection and analysis?
5. How was AI used in other activities?

Linklist:

1. Institutional Guidelines and didactic frameworks

- Universität Göttingen — *KI für die Lehre (Lehrende)*. https://www.uni-goettingen.de/de/684277.html
- Universität Göttingen — *KI für das Lernen (Studierende)*. https://www.uni-goettingen.de/de/684318.html
- Universität Göttingen — KI-sensible Frageformen. https://uni-goettingen.de/de/684356.html
- Universität Göttingen — *Standards zum Umgang mit KI-Tools (Sozialwiss. Fakultät)*. https://www.uni-goettingen.de/de/standards+zum+umgang+mit+ki-tools+in+studium+und+lehre/698331.html
- Technische Universität München — *Didaktische Empfehlungen / Handreichungen (ProLehre)*. https://www.prolehre.tum.de/prolehre/materialien-und-tools/handreichungen/

2. Legal Frameworks

- RUB — *Gutachten: Didaktische und rechtliche Perspektiven auf KI-gestütztes Schreiben in der Hochschulbildung*. https://hss-opus.ub.ruhr-uni-bochum.de/opus4/frontdoor/index/index/docId/9734
- Zusammenfassung zum RUB — *Gutachten*: https://news.rub.de/wissenschaft/2023-03-08-gutachten-ein-verbot-von-ki-schreibtools-hochschulen-ergibt-keinen-sinn

3. Good scientific practice

- Ombudsgremium für wissenschaftliche Integrität — *FAQ: KI und gute wissenschaftliche Praxis*. https://ombudsgremium.de/13211/faq-kuenstliche-intelligenz-und-gute-wissenschaftliche-praxis/
- AI-Cards — *Webservice für Selbstreport / Dokumentation von KI-Nutzung in Publikationen*. https://ai-cards.org/

4. Practice-Oriented Guides and Concrete Scenarios

- Universität Hamburg — *„Erste praktische Ideen zum Umgang mit ChatGPT in Lehre und Prüfung"* https://www.wiso-elearning.uni-hamburg.de/blog/erste-praktische-ideen-zum-umgang-mit-chatgpt-in-lehre-und-pruefung
- Universität Hohenheim — *Leitfaden: „Unlocking the Power of Generative AI…"* (konkrete Ideen für Studierende — ab S.18; Lehrende — ab S.28). https://digital.uni-hohenheim.de/fileadmin/einrichtungen/digital/Generative_AI_and_ChatGPT_in_Higher_Education.pdf
- Universität Paderborn — *Handreichung: KI in Seminar- und Abschlussarbeiten (für Lehrende)*. https://www.uni-paderborn.de/fileadmin/lehre/Digitale_Lehre_2023/KI-Talks/KI_in_Seminar-_und_Abschlussarbeiten__Eine_Handreichung_fuer_Lehrende.neu.pdf