

openTUHH | Policy of Openness in Research and Teaching

Preamble

Hamburg University of Technology (TUHH) sees itself as an innovative university. This means that current developments, topics and trends in teaching and research are taken up and shaped actively and continuously.

Openness in research and teaching plays an increasingly important part in these developments and requires a corresponding strategic, cultural and structural change at the TUHH. The University's approach to openness is mainly expressed in the discourses on **Open Education**, **Open Science** and **Open Access**.

Due to digitization **Open Science** and **Open Education** are possible in an entirely different way than in the past. They necessitate a cultural change to a more open and more intensive exchange of teaching material and research data. This can lead to new forms of research and teaching that may substantially improve the quality of learning and research processes and of learning and research results. The TUHH would therefore like to offer its members open spaces and opportunities to help shape a new, open culture of teaching and research.

Open Discourses

Open Science is a culture change in scientific methodology and communication. It means that communication, networking and sharing information among scientists and between scientists and civil society can be shaped and promoted more openly and more effectively by means of digital tools. It is accompanied by the requirement to make access to scientific publications, research data and scientific software barrier-free from the financial, technical and legal perspectives. The aim of this is to improve scientific processes, to enhance transparency and ways to assure the quality of scientific work by improving the provision of information and to increase scientific transfer and innovation in business and society that is based on scientific findings (cf. Helmholtz, <https://os.helmholtz.de>).

Along the same lines as the open approach to shaping research processes, the **Open Education** concept is based on open access to teaching and learning processes, which means making education open and freely accessible. Analogous to the Open Science concept, here too the focus is not only on open material but also on a common understanding of education as involving interdisciplinary collaboration and knowledge sharing. The employment and use of open software can help to ensure for everyone everywhere barrier-free access to educational content and education in general. "Open education encompasses resources, tools and practices that employ a framework of open sharing to improve educational access and effectiveness worldwide" (Open Education Consortium 2018).

Hamburg University of Technology is committed by this open policy to quality, transparency, participation and international cooperation in research and teaching and to networking within the University and with partners in science, business and politics. It thereby embraces the vision of the university as a place for trans-disciplinary dialog where work on solutions to societal challenges and basic research take place in open exchange with work, testing and research being undertaken jointly.

That is why, on October 26, 2016, we signed the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (<https://openaccess.mpg.de/3883/Signatories>), joined on July 7, 2018 the higher education network Education through Responsibility (<https://www.bildung-durch-verantwortung.de>) and initiated or played a leading role in creating projects like the Hamburg Open Online University (HOOU) and Hamburg Open Science (HOS).

Recommendations and Measures

In order to anchor openness in teaching and research lastingly at the TUHH we recommend all TUHH members to actively pursue the objectives of **Open Science**, **Open Access** und **Open Education** wherever it makes sense to do so.

1. Open Access

Open Access to Publications from the TUHH enables content to be used around the world without financial, technical or legal barriers. That is why the TUHH recommends the following alternatives to all of its members:

- Publishing in open access publications
- If not published in open access publications, immediate secondary open access publication in the TUHH's institutional repository.

Open access publication may incur publication fees. To finance them, wherever possible projects are to raise dedicated third-party funding. The TUHH also maintains a publication fund for articles published in purely open access journals (the *Golden Road*). Alongside that the University supports the transformation of paid magazine subscriptions into syndicated license agreements connected with automatic open access licensing of publications from the German scientific system.

For secondary publications the TUHH maintains a free institutional repository, currently TUHH Open Research (TORE, <https://tore.tuhh.de>), and offers advice and support. If publishing with a commercial publisher you should negotiate a non-exclusive right of use in order to facilitate immediate secondary publication (*Green Road* or self-archiving). You should at least dispense with granting exclusive copyright to the publisher so that secondary publication can go ahead after an embargo period.

Research data is the basis of research findings and should, in keeping with Fair Data principles, be globally findable, accessible, interoperable and reusable. The TUHH recommends its members to publish research data in accordance with these principles as openly as possible and as closed as necessary. Publication of research data can initiate a more intensive exchange with other scientists as results are reused and evaluated by other groups. The reputation of scientists can thereby be improved and new cooperation arrangements can be initiated. The TUHH helps its scientists to plan data management with the Research Data Management Organizer (<https://rdmo.rz.tuhh.de>) and provides within TORE a research data repository for long-term archiving.

2. Open Source

Before using proprietary and commercial software the TUHH recommends a thorough evaluation of free and open source solutions in order to reduce dependence and to cut costs. Security and technical suitability in respect of use and maintainability must be checked, as must the size, sustainability and stability of the development community.

Wherever it is possible and makes sense, TUHH platforms should be used to make developed software available for reuse and further development and to increase public visibility of research and teaching. Furthermore, for developing software in research projects and student assignments we recommend, wherever it is possible and makes sense, creating open source software to simplify reusability and open exchange with other scientists.

3. Open Educational Resources

Open Educational Resources (OER) have been used and developed internationally in the university context since the millennium. They are a central pillar of UNESCO's Global Education 2030 agenda (<https://en.unesco.org/education2030-sdg4>) because, being freely available and free of charge, they have the potential to contribute to greater educational justice.

Licensing under Creative Commons (<https://creativecommons.org/>) ensures use and further processing of educational material of all kinds with legal compliance. OER can be duplicated, combined with other material, processed and republished. Open Educational Resources have the potential to bring about a new dynamic in education if didactic teaching and learning scenarios flank their use and development. As part of the Hamburg Open Online University (HOOU) project the TUHH has made an active contribution to OER development and would like to encourage and assist all members of the University to use and develop OER and to develop didactic concepts along Open Education lines.

TUHH members are explicitly encouraged and helped to make their scientific findings in research and teaching publicly available and to try out new forms of open collaboration.

Process Support and Infrastructure

The TUHH and the Vice-Presidents' openTUHH team support this development process and provide the necessary personnel capacities and funding for the data center, TU library and administration service offerings and infrastructures. These include, in addition to project advice, trustworthy modern software tools and workflows for collaboration and publication, such as:

- Central repositories for open access to publications and data from teaching and research
- Global collaboration in research and teaching by means of tools and platforms such as GitLab, Discourse and Jupyter Notebook
- Consulting and assistance with quality-assured publication processes and with archiving research and teaching output at the TUHH
- The use of open formats to develop and distribute *Open Educational Resources*
- Preferential use, wherever it is possible and makes sense, and development and publication of free/open source software in research and teaching

The open policy is recommended and not mandatory. The choice of publication and accessibility of scientific findings in research and teaching is entirely at the scientist's discretion.

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