Implementation Regulations for Good Research Practice (*Principles for Ensuring Good Research Practice at TU Berlin* – GWP)

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Preamble

The principles of good research practice include in particular: working *lege artis*, exercising rigorous honesty with regard to one's own contributions and those of third parties, consistently questioning all results, and facilitating and encouraging critical discourse in the scientific community.

Professional ethics and research organization (Section 2 GWP)

Researchers are responsible for implementing and upholding the fundamental values and standards of research in their actions. They keep up to date with both the state of research and the standards of good research practice. Experienced researchers and junior scholars support each other in the continuous learning and training process and communicate with each other regularly. The same applies to those working on research projects. They define their roles and responsibilities in an appropriate manner and adapt them where necessary. The latter is particularly appropriate if the focus of someone's work within a research project changes.

Organizational responsibility (Section 2 GWP)

1. Organizational responsibility of the Executive Board at TU Berlin

Working in cooperation with the Academic Senate, the Executive Board at TU Berlin creates the framework conditions for research work. The Executive Board is responsible for ensuring that good research practice is observed and communicated as well as for providing appropriate career support for all researchers.

The Executive Board at TU Berlin is therefore responsible for ensuring that the actions of its members conform with the provisions by supporting the communication of and compliance with the rules of good research practice through appropriate organizational structures.

The organizational structures instituted by the Executive Board for this purpose ensure that, depending on the size of the respective academic unit (i.e. faculty, institute, research group, etc.), the tasks of management, supervision, quality assurance, and conflict resolution are clearly assigned and appropriately communicated to the relevant members of staff.

Gender equality and diversity are taken into account when appointing staff and in staff development measures. The processes involved are transparent and eliminate non-scientific factors, i.e. unconscious bias, to the furthest extent possible. Suitable support structures and concepts have been established for junior scholars. Sincere professional advice for academic careers and other career paths is provided, as are continuing education opportunities and mentoring for academic and academic support staff.

- The general principles of staff selection at TU Berlin are set out in the Circular on Job Posting, Selection, and Hiring Procedures (*Rundschreiben zum Ausschreibungs-, Auswahl- und Einstellungsverfahren*).
- Selection procedures for professors are regulated in the Guidelines for Conducting Appointment Procedures at TU Berlin and the Statute on Appointments to Professorships and Junior Professorships.
- Junior scholars are advised by the Center for Junior Scholars (CJS). The Strategy for the Advancement of Junior Scholars and its action plan were adopted in 2019 and are regularly updated.
- Staff development is strategically supported by Human Resources and Continuing Education. Both the Center for Scientific Continuing Education and Cooperation (ZEWK) and Human Resources and Continuing Education offer numerous continuing education courses for instructors, researchers, staff members, and managers.
- There are also a number of advising and continuing education programs as well as mentoring services for targeted staff development and leadership training programs for researchers, such as ProMotion and ProFil.
- In the interest of gender equality, the University published Guidelines for the Advancement of Women, the goals of which include the regular drafting and updating of plans to advance women at TU Berlin.

2. Organizational responsibility of the management of faculties, institutes, etc.

While the Executive Board in cooperation with the Academic Senate creates the framework conditions for research, the actual implementation of these conditions takes place in the faculties, central institutes, research associations, and institutes, etc. The faculties are responsible for adopting and implementing doctoral and Habilitation regulations and the procedures these give rise to, as well as plans for the advancement of women. The other organizational responsibilities at this level consist mainly of communicating the culture of the various disciplines and implementing the provisions listed under 1. above.

The heads of these academic institutions also ensure that researchers are able to comply with legal and ethical standards.

3. Organizational responsibility of the heads of academic chairs and research groups

The head of an academic chair or research group is responsible for their entire unit. Work in these units is organized in such a way as to ensure that the group as a whole can carry out its tasks effectively, that the required cooperation and coordination are possible, and that all members of the group are aware of their roles, rights, and duties. Managing these units also includes, in particular, ensuring appropriate individual supervision of junior scholars – as enshrined in the overall concept of the respective faculty or institute, etc. – as well as the professional development of both academic and academic support staff (administrative, technical, and service staff). Appropriate organizational measures must be in place to prevent abuse of power and the inappropriate exploitation of dependent relationships, both at the level of the individual chair or research group and at the level of the faculty or institute.

A number of conflict counseling services are also available at University and faculty level. These services coordinate with each other in their work. You can find further details in the Guidelines on Conflict Management. [Regulation under discussion at the time of publication.]

TU Berlin ensures that the size and organization of academic chairs and research groups enables management tasks to be performed appropriately, in particular the transfer of skills, academic support, and supervisory and mentoring duties. The heads of these units are supported in the execution of their management duties through a broad range of continuing education programs and are made aware of the responsibilities their work entails.

In this regard, TU Berlin expressly makes clear that in addition to their research responsibility, management and supervisors also have a duty of (employer) responsibility under labor law to both academic and non-academic staff.

The heads of units as well as the various advising services at the University provide academic and academic support staff with a balance of support and autonomy appropriate to the stage they have reached in their careers. The rights and obligations inherent to the different groups of staff (professors, academic staff, support staff, and students) are widely communicated and participation in the various academic self-governance committees is encouraged through direct approaches.

Performance and evaluation criteria

At TU Berlin, high-quality research is also dependent on discipline-specific criteria.

TU Berlin's tools for assessing the quality of research work are not restricted to knowledge acquisition and critical reflection. Other possible performance indicators include a commitment to teaching, academic self-governance, public relations, knowledge and technology transfer, and contributions that benefit society as a whole. The approach taken by researchers in their work, such as openness to knowledge and willingness to take risks, is also taken into account. Personal, family, or health-related periods of absence and resulting extended training or periods spent acquiring qualifications and skills, pursuing alternative career paths, and comparable circumstances are taken into account when evaluating performance in accordance with the Guidelines for Conducting Appointment Procedures at TU Berlin and the Statute on Appointments to Professorships and Junior Professorships. Further consideration is given to multidimensional performance and evaluation criteria in the context of performance assessment in research and teaching (LinF Guidelines), teaching evaluations (Evaluation Regulations), accreditation

(accreditation regulations) and individual target agreements.

Methods and standards

The application of a method generally requires specific skills. Researchers may also work closely with colleagues who possess the required capabilities.

Good research work (research design)

"We are fully aware of our responsibility vis-à-vis society – not only due to our history – but also because we must uphold ethical and humanistic oriented standards in our research and teaching endeavors." (TU Berlin Mission Statement.)

The University has established a central Committee for Ethics in Research (KEF), whose task it is to develop binding principles of research ethics as well as corresponding procedures for assessing research projects for adoption by the Academic Senate.

Researchers must be constantly aware of the risk of misuse of research results. Their responsibility is not restricted to legal compliance, but also includes the obligation to use their knowledge, experience, and skills to identify, assess, and evaluate risks. In doing so, they take particular account of aspects associated with security-relevant research (dual use).

Methods to avoid (unconscious) bias in the interpretation of findings, for example conducting tests on the basis of blinding, are applied as far as possible. Researchers examine whether and, if so, to what extent gender and diversity can be significant for their research project (with regard to the methods, work program, objectives, etc.). The respective framework conditions are taken into account when interpreting findings.

As far as possible and reasonable, researchers draft documented agreements on the rights of use at the earliest possible stage of a project. Documented agreements are particularly useful if several academic and/or non-academic institutions are involved in a research project, or if it is foreseeable that a researcher will change institution and would like to continue using the data they generated for other or their own research purposes. In particular, the researchers collecting the data and the institutions for which they conduct research, i.e. usually TU Berlin, are entitled to use the research data. Any deviating regulations must be contractually agreed. In ongoing research projects, the authorized users decide (in particular in accordance with data protection regulations) whether third parties should have access to the data.

More detailed regulations can be found in the Guidelines on Usage Rights in Research. [Regulation under discussion at the time of publication.]

Handling research data (cross-phase quality assurance)

The entire research process must be documented in accordance with Section 8(3) GWP to ensure essential quality assurance across all phases for possible replicability and confirmation of results by other researchers. For this purpose, all information necessary for understanding the research in terms of the research data used or generated, the methodological, evaluation, and analysis steps taken, and, if applicable, the development of the hypothesis must be recorded; the traceability of citations must be ensured; and third parties must be granted access to this information – as far as data protection law permits. When developing research software, the source code is documented. In general, all results are included in the scientific discourse and made publicly accessible. In line with this goal, TU Berlin has adopted an Open Access Policy[1] and provided a comprehensive research data repository with DepositOnce[2]. The suitability of personal source data for access and subsequent use via repositories must be discussed in each case with the relevant data protection officers.

Researchers at TU Berlin conduct each step in the research process *lege artis*. Whenever research findings are made publicly accessible in any way, the quality assurance mechanisms involved are always explained. This applies in particular when new methods are developed.

[1] https://www.tu.berlin/en/research/research-profile/open-science/open-access

[2] https://www.tu.berlin/en/ub/szf/tips-tools/publishing

Continuous, research-related quality assurance refers in particular to compliance with subject-specific standards and established methods, to processes such as the calibration of equipment, the collection, processing, and analysis of research data, the selection and use of research software, its development and programming, and the maintenance of laboratory notebooks.

Researchers must correct inconsistencies or errors in findings that have already been published or made publicly accessible as soon as they become aware of them. Should the inconsistencies or errors warrant the retraction of a publication, the researchers shall work with the relevant publisher or infrastructure provider etc. to ensure a swift correction/retraction and ensure that this is communicated appropriately. The same applies for inconsistencies or errors that are brought to the attention of the researchers by third parties.

In principle, all research results are included in the scientific discourse and described in a complete and transparent manner. Decisions for not making results publicly accessible, or only to a limited extent (in the narrower sense in the form of publications, but also in the broader sense via other communication channels), must not depend on third parties. Restrictions regarding the public accessibility of data are possible for patent applications or research involving personal data. Decisions regarding whether, how, and where results are made publicly accessible are the responsibility of the individual researchers.

Complete and transparent also means that all research data, materials, and information on which the results are based, the methods applied, and the software used must be disclosed to the furthest extent possible and work processes must be described in detail. Self-programmed software is made publicly accessible by providing the source code. Specially developed research software that is to be made available to third parties will be provided with an appropriate license. Researchers provide complete and correct proof of their own and third-party preliminary work.

Findings should be deposited in (preferably approved) archives and repositories on the basis of the FAIR principles (Findable, Accessible, Interoperable, Re-Usable).

Preserving and archiving research data (primary data)

Researchers retain publicly accessible research data and research results as well as the key materials on which they are based and, if applicable, the research software used, in a manner consistent with the standards of the relevant discipline and retain them for 10 years as a general rule. Researchers shall provide demonstrable reasons for not retaining certain data, or only retaining them for a shorter period. The reasons are described in a comprehensible manner. The period of retention begins on the date the findings were made publicly accessible.

TU Berlin ensures that the necessary infrastructure is in place for archiving.

Authorship and publication

An author is an individual who has made a genuine, identifiable contribution to the content of a research publication of text, data, or software.

The contribution must refer to the scientific content of the publication. Each contribution must be examined separately to determine if it is genuine and identifiable. This will depend on the discipline concerned. A genuine, identifiable contribution is primarily one where the researcher was involved in a scientific capacity in the development and conception of the research project, or the preparation, collection, acquisition, provision of the data, software, sources, or the analysis/evaluation or interpretation of the data, sources and the conclusions drawn from these, or in the writing of the manuscript. Contributions that do not qualify for authorship can be appropriately acknowledged in footnotes, in the foreword, or in the acknowledgment. Honorary authorship, where no such contribution has been made, is excluded. A management or supervisory function does not qualify for co-authorship. The decision as to the order in which authors are named is made in good time, normally no later than when the manuscript is drafted, and in accordance with clear criteria that reflect the practices within the relevant disciplines. Researchers may not refuse to give their consent to publication of the results without sufficient grounds. Withholding consent must be justified on the basis of verifiable criticism of data, methods, or results.

When selecting a publication medium, its quality and reputation in the respective field of discourse must be taken into account. In this respect, researchers with an editorial role should also carefully consider the publication media for which they take on editorial work. The scientific quality of a contribution is not determined by the publication medium in which it is made publicly accessible. However, the reputation of a publication medium may often affect how a contribution is perceived.

In addition to books and specialist journals, specialist repositories, data and software repositories and blogs are further options for publishing. New or unfamiliar publication media should be checked for their reputability. When choosing a publication medium, researchers should consider as a key criterion whether the publication medium has established its own guidelines for good research practice.

Where possible, authors should seek to ensure that their research contributions are properly referenced by publishers or infrastructure providers so as to enable their correct citation by users.

In keeping with the concept of "quality rather than quantity," excessively short publications should be avoided. Repetition of the content of publications as (co-)author must be limited to the extent necessary to understand the context and, if necessary, resolved by citing previously published results.

Further details can be found in the *Guidelines on Authorship*.

Ombudspersons and scientific misconduct

Suspicion of scientific misconduct

Reporting a suspicion of scientific misconduct (to an Ombudsperson or the Investigation Commission for Scientific Misconduct) must not negatively impact the academic or professional career of either the person reporting the suspicion (whistleblower) or the person against whom the suspicion is directed.

Where possible, the report should not delay the whistleblower in obtaining qualifications, especially in the case of early career researchers, nor should it be detrimental to the writing of theses and doctorates; this also applies to working conditions and possible contract extensions. The investigating bodies (the ombudspersons or the Investigation Commission for Scientific Misconduct) will work on the basis of the presumption of innocence at each stage of the proceedings as part of a case-by-case assessment. In principle, the suspected party should not suffer any disadvantages while the investigation is being conducted until scientific misconduct has been formally established.

Ombudspersons

The existence of two ombudspersons (one man and one woman) at TU Berlin is to be communicated to the entire University. The ombudspersons reach an agreement with the Executive Board regarding how far it is necessary and possible to relieve them of other tasks. They function as confidential points of contact for all researchers at the University.

Suspicions of scientific misconduct can also be addressed directly to the Investigation Commission for Scientific Misconduct at TU Berlin without first contacting the ombudspersons.

In addition, members of TU Berlin are free to contact the DFG's German Research Ombudsman for advice and support regarding good research practice and cases of scientific misconduct.

Confidentiality

The identity of both the whistleblower and the suspected party as well as the details of the case will not be disclosed to third parties without their consent. This applies unless there is a legal obligation to disclose or if the suspected party were to be prevented from presenting their case effectively without the identity of the whistleblower being made known. If it is necessary to reveal the name of the whistleblower, they will be given the opportunity to retract their report before their name is disclosed. The confidentiality of the procedure is jeopardized if the whistleblower decides to go public with their suspicion. The investigating ombudsperson or commission decides on a case-by-case basis how to deal with a breach of confidentiality by the whistleblower. The whistleblower must still be protected in the case of unproven scientific misconduct as long as they clearly did not bring the allegations contrary to their better knowledge.