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Guidelines for Good Scientific Practice Rhine-Waal University of Applied Sciences

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Preamble[1]

The fundamental principles of good scientific work apply to all scientific disciplines. Moreover, they provide the ethical foundation for both professionalism and integrity in science. These fundamental principles ensure exchanges remain mutually respectful and promote the essential trust of the public in science. Finally, they are especially important to training future generations of researchers.

Rhine-Waal University of Applied Sciences has defined its own internal guidelines for ensuring good scientific practice and handling accusations of scientific misconduct in the pages that follow. This document also serves to enshrine these principles as a unified scientific standard of quality. The information contained herein is equally valid for all members of Rhine-Waal University of Applied Sciences: from researchers and teachers, to students, PhD and postdoctoral researchers, and non-academic staff working in scientific areas alike. All members of Rhine-Waal University of Applied Sciences are obliged to adhere to these guidelines in their scientific activities as well as defend and uphold good scientific practice at all times.

Rhine-Waal University of Applied Sciences expressly recognises its institutional responsibility in research and education. New employees in teaching and research should receive a copy of these guidelines upon signing their employment contract.

[1] These guidelines of Rhine-Waal University of Applied Sciences are based on the recommendations for good scientific practice at German universities published by the University Rectors' Conference (*Hochschulrektorenkonferenz*) in May 2013, the recommendations for academic integrity published by the Science and Humanities Council (*Wissenschaftsrat*) in 2015, as well as the codex on ensuring good scientific practice published by the German Research Foundation (*Deutsche Forschungsgemeinschaft*) in September 2019. We would like to note explicitly that these Guidelines for Good Scientific Practice are also inspired by similar guidelines from TH Köln University of Applied Sciences dated 12 December 2019 and published on 31 January 2020, and that TH Köln University of Applied Sciences has been informed of this fact. Passages from the aforementioned documents have either been copied directly or adapted appropriately in the creation of these Guidelines for Good Scientific Practice of Rhine-Waal University of Applied Sciences.

I Fundamental principles of good scientific practice

Section 1 Obligations to uphold general principles, Professional ethos

(1) Members of Rhine-Waal University of Applied Sciences are obliged to uphold the principles of good scientific practice in all work and employment contexts under due consideration of the peculiarities of their current scientific field. This obligation includes:

a. Working *lege artis*, or according to the state of the art

b. Fully documenting the processes and information which produced research findings

c. Always maintaining a critical opinion for one's own findings, as well as promoting and remaining open to critical discourse in the scientific community

d. Strict honesty and sincerity towards one's own scientific contributions and the contributions of others

e. Accepting one's responsibility for adequately teaching and mentoring early-career researchers

f. Ensuring the proper backup and storage of primary data

g. Observing the intellectual property rights of others

h. Adhering to ethical standards when collecting data and running experiments.

(2) Every researcher working for Rhine-Waal University of Applied Sciences is personally responsible for putting into action the fundamental principles and standards of good scientific practice as well as advocating for and actively safeguarding them. This responsibility also includes promoting the principles of good scientific practice in teaching and training from the earliest opportunity. Researchers are obliged to keep their understanding of both good scientific practice and the state of the art in their scientific disciplines up-to-date. Furthermore, they should support each other in this process of life-long learning and training.

Section 2 Responsibilities for leaders of scientific organisations and teams

(1) The Executive Board of Rhine-Waal University of Applied Sciences will allocate the resources needed to create the conditions for good scientific work. The Executive Board is responsible for ensuring good scientific practice at Rhine-Waal University of Applied Sciences as well as providing adequate training opportunities on this topic for all researchers. The Executive Board, the deans of the faculties and leaders of scientific teams will create conditions under which researchers are able to adhere to legal and ethical standards in their work. These conditions include:

a. Processes and principles for hiring and professional development that are clear, documented in writing, and pay due respect to the principles of equal opportunities and diversity

b. Establishing mentoring structures and concepts for early-career researchers

c. Adequate career support for employees active in scientific contexts

d. Continuous opportunities for research.

(2) Leaders of scientific teams will assume responsibility for their entire team within the meaning and spirit of these guidelines and, as is the case for team leaders in other areas of Rhine-Waal University, they are obliged to organise their areas of responsibility in such a way that all matters of authority, supervision, conflict management and quality assurance are clearly and transparently delegated. Leaders must ensure that delegated duties are indeed being performed and that all team members understand their roles, rights and responsibilities. Team leaders are also responsible for ensuring adequate individual support and career development opportunities for early-career researchers. Support, mentoring, autonomy and opportunities to contribute should be given to researchers in a manner appropriate to their level of career experience and adjusted over time as they grow more self-sufficient in their roles.

(3) Suitable measures for preventing abuses of power and the exploitation of power dynamics must be developed and put into action. This applies to Rhine-Waal University of Applied Sciences as a whole as well as to individual scientific teams.

Section 3 Mentoring and support for early-career researchers

(1) While training and fostering early-career researchers (i.e. students, doctoral and postdoctoral researchers), special attention must be paid to the importance of good scientific practice. Every student, doctoral researcher or postdoctoral researcher in a scientific team at Rhine-Waal University of Applied Sciences must have a designated contact person responsible for explaining and teaching the principles of good scientific practice. In general, however, all teachers and researchers at Rhine-Waal University of Applied Sciences are expected to encourage early-career researchers to uphold these guidelines. Supervising agreements between teaching staff and doctoral researchers shall also be grounded in the principles of good scientific practice.

(2) Doctoral supervision must be organised in such a way that the supervisor is able to help organise the doctoral process and map out the researcher's future career path (particularly in academia). In addition, the supervisor should have an uninterrupted overview of the researcher's current focus and the major stages of their dissertation. Regular meetings and progress monitoring ensure that early-career researchers are able to complete their work in an appropriate time frame. This approach allows early-career researchers at Rhine-Waal University of Applied Sciences to enjoy high quality supervision in their research.

Section 4 Performance dimensions and assessment criteria

(1) Performance assessments should always prioritise the quality and originality of a researcher's work over quantity. Quantitative indicators should only be considered one aspect of many in a researcher's overall performance and must be judged through discipline-specific lenses.

(2) In addition to research-related performance, other considerations can also influence a researcher's performance assessment. These include, for example, an outstanding commitment to teaching, performing certain academic duties, public relations work, or other contributions with broader significance for society, as well as contributions that advance the transfer of knowledge and technology between academia and other spheres of society. Performance assessments can also touch on a researcher's overall attitude and approach to science, their openness for new findings and knowledge, as well as their willingness to take risks.

In addition, details of any personal, family or health-related adversity or unusual career paths in CVs can also be included in performance assessments, provided the information was given freely and in compliance with the General Equal Treatment Act of Germany (AGG).

Section 5 Confidentiality and neutrality in reviews and advising

Researchers are bound to confidentiality, particularly with regard to submitted manuscripts and funding proposals, performance assessments, and their own advising and decision-making activities in committees of Rhine-Waal University of Applied Sciences. They will remain steadfastly honest and truthful when forming opinions and decisions. Researchers will not improperly disclose any information to third parties or misuse the intellectual property of others. They are obligated to immediately and voluntarily disclose any potential bias or conflicts of interests to the ombudsperson.

II Good scientific practice in the research process

Section 6 Roles and responsibilities

Every contributor to a research project must understand their individual role and responsibilities. This can include, for example, sufficiently documenting and transparently communicating any necessary project modifications due to changes in emphasis areas or funding from project partners.

Section 7 Quality assurance across all project phases

(1) Good scientific practice includes continuous quality assurance across all phases of a project.

(2) Choosing appropriate discipline-specific methods, tools and processes, as well as the process of collecting and evaluating data, demand the utmost care and attention. At the same time, research questions should be addressed with scientifically sound and reproducible methodologies. The know-how required for certain methodologies can also be acquired through collaboration. When new methods are developed and applied, researchers must demonstrate, in particular, the quality assurance mechanisms that were chosen, the standards that were applied to data collection, and the significance of the findings which were produced.

(3) Good research design is predicated on a thorough analysis of the current state of research as well as the established standards and practices for a given field. This approach also forms the basis for deducing relevant and appropriate research questions. Steps must be taken to prevent potential biases (whether intentional or otherwise) from influencing how research findings are interpreted. For this reason, the significance of gender and diversity in a specific research context, for example, should be considered across all stages of the project.

(4) Researchers are obliged to document and archive all relevant data which led to their findings in a clear, comprehensible and unbiased manner (no “cherry picking”). This includes the details of how the hypothesis was developed, the research data that was used and the subsequent findings, the methods that were applied as well as the steps undertaken to evaluate and analyse the findings. Expert approaches must be used to verify and analyse findings. Where other approaches were used, researchers must provide a plausible explanation for why. Documentation and findings must be protected from manipulation as best as possible. Candour is expected of all researchers: accepting criticism, maintaining a healthy scepticism of one’s own findings and ensuring that other researchers are able to reproduce said findings are cornerstones of good research quality.

Section 8 Scientific publications and other communication channels

(1) As a rule, all research findings should be published and introduced into the wider scientific discourse. Third-parties should be given unrestricted access to all relevant data required to replicate the findings. Specific reasons for choosing not to publish findings must be documented. Researchers’ freedom to decide whether their own findings should be published at all (referred to as “negative publication freedom” in Germany) remains unaffected. However, this decision may not hinge on the interests of third parties.

(2) Appropriate publication mediums can include, in particular, books, journals, subject-specific repositories data and software repositories, and blogs.

(3) Scientific experiments must always be verifiable and reproducible. Research findings must be published in their entirety and include a comprehensible explanation of the underlying data, materials, information, methods and software used, process steps and quality assurance processes. This is especially important when new methods were developed. The researcher’s own preliminary work, the work of others, and any relevant publications upon which the new research was built must be cited fully and in accordance with appropriate standards.

(4) When communicating research findings via channels other than the “classic” publication as a monograph in a book or journal, the quality assurance mechanisms which were used must be explained in ways suitable to the specific target audience.

(5) When planning to publish research findings, please consider the following:

a. Publications containing personal data (i.e. data of a personal or professional nature which can be used to identify a specific natural person) are only permissible with the express consent of the affected person(s).

b. The use and origins of all third-party data, organisms, materials and software which contributed in some way to the research findings must be clearly indicated.

c. Avoid an inappropriately “piecemeal” approach to publishing as well as excessive self-citation.

d. The scientific quality of a contribution is not reflected in the choice of publication medium. Authors should, however, exercise diligence in their choice of publication, duly considering both quality and visibility within their discipline, as well as help to ensure that the identifying data of their publication allows for correct citation. Researchers must also apply the same rigour and care when deciding on whether to work as an editor for a publisher.

e. Researchers must store essential data from their publications in recognised (subject-specific) repositories or archives in accordance with the FAIR principle (Findable, Accessible, Interoperable, Re-usable). For open-source software, the source code must remain persistent, citable and fully documented under an appropriate license (e.g. Creative Commons).

(6) Authors will also strive to ensure proper correction or retraction of their publications should any falsified hypotheses, errors, misconceptions or discrepancies come to light after the fact.

Section 9 Authorship

(1) All researchers who have made a genuine, demonstrable contribution to the scientific content of a text, data or software publication are considered authors. Genuine, demonstrable contributions include, in particular:

a. Brainstorming and developing a research project

b. Compiling, collecting, cleaning or providing data, software, hardware or sources

c. Analysing, evaluating or interpreting data, sources and the resulting conclusions

d. Writing the manuscript.

(2) Co-authorship is not justified by the following:

a. Securing grants and financing

b. Supplying standard materials for experiments

c. Briefing project members on standard methods

d. Purely technical tasks relating to data collection

e. Purely technical support (e.g. issuing hardware)

f. Simple transmission of data

g. Simply reading the manuscript without providing substantial contributions to the actual content

h. Simply being the line manager or head of a team/department responsible for a scientific publication.

Credit for smaller contributions should be given in the acknowledgements section instead. “Honorary authorships” are not permitted.

(3) Where not explicitly indicated otherwise, the listed authors are considered to share equal responsibility for the contents of a publication. The order of authors should be determined according to clear criteria with respect to the standard conventions for the field in question. The authors grant their consent for the final version of the manuscript upon submission for publication at the latest. When required for publication, consent may only be refused on sufficient grounds, for example due to verifiable criticism of the underlying data, methods, results or unclear usage rights.

(4) Co-authors who prematurely terminate collaboration on a publication or prevent or refuse a publication without sufficient cause are in violation of good scientific practice.

Section 10 Legal and ethical frameworks, usage rights

(1) Researchers at Rhine-Waal University of Applied Sciences are obliged to exercise their constitutionally-granted research freedom responsibly. In particular, they must observe the rights and responsibilities set forth by applicable legal requirements and third-party agreements. Other important framework conditions for research include agreements on the use of research data or findings as well as grant allocation decisions (including any incidental provisions of the funding organisation).

(2) The usage rights for research data belong primarily to the researcher who produced the data. Written agreements governing usage rights must be concluded at the earliest possible stage of research. This applies, in particular, to joint research projects with third-parties or if a contributing researcher will be leaving Rhine-Waal University of Applied Sciences in the foreseeable future.

(3) Researchers are obliged to make full use of their individual expertise, experience and skills to recognise, estimate and assess the risks and consequences of their research. They must also consider the risk of misuse of their findings, particularly, but not exclusively, in defence and security research. Where necessary, all proper permits, authorisation or approval (e.g. from ethics committees) must be obtained before conducting research.

(4) Rhine-Waal University of Applied Sciences is obliged to develop compulsory ethical principles for research as well as processes for judging research proposals accordingly.

Section 11 Archiving research findings and data

(1) As a general rule, all publicly available research data and findings, including all underlying materials, original data and, if applicable, software used, must be archived in an appropriate manner and in line with any relevant discipline-specific standards for a period of ten years from the original date of publication. Archives should be stored on secure, long-term data storage devices at the institution where the research was conducted or in a recognised repository. If researchers or co-authors leave Rhine-Waal University of Applied Sciences before the end of the retention period for their research, they must clarify the transfer of responsibility for the archive with their supervisor. Shorter retention periods or a partial archiving of data are only permissible for justifiable reasons (statutory requirements, for example), which must be documented in writing. If multiple institutions were involved in the research, responsibility for the archive as well as access rights must be clarified in a written agreement.

(2) The Executive Board will provide the necessary infrastructure for proper archiving of research data and findings.

III Violations of good scientific practice

Section 12 Scientific misconduct

(1) Scientific misconduct occurs when deliberate or grossly negligent misrepresentations are made in a scientific work, intellectual property rights are violated or the research activities of others are adversely affected. Acts of scientific misconduct include, but are not limited to:

a. Contriving, distorting, falsifying or suppressing research data and findings

b. Discrepancies between visual depictions and conclusions derived from them

c. Misrepresentations in grant applications or in connection with reporting obligations (including misrepresentations of a researcher's own scientific publications and papers)

d. Use of a third party's intellectual property without proper citation (plagiarism)

e. Stealing research approaches and ideas

f. Unauthorised disclosure of data, theories and insight to third parties

g. Unauthorised publication of or unauthorised access to yet unpublished works, findings, hypotheses, teaching or research approaches

h. Obtaining authorship for a publication through deception

i. Excluding any legitimate co-authors

j. Sabotaging research activities, for example by damaging, destroying or manipulating experiments, devices, documents, hardware, software, chemicals or other materials needed for research purposes

k. Falsifying or unauthorised deletion of research data, documents or other relevant documentation

l. Making deliberately false or malicious allegations of scientific misconduct.

(2) Scientific misconduct can also occur through the involvement in the misconduct of others, co-authoring publications containing misrepresentations and neglecting one's own monitoring duties. However, scientific misconduct also requires deliberate intent or gross negligence.

(3) When acting as a consultant, scientific misconduct can occur, for example, in the following cases:

a. Through deliberate action or gross negligence, a consultant discloses or uses for their own purposes any data, theories or insights without first obtaining proper permission

b. Through deliberate action or gross negligence, a consultant shares confidential information from committee meetings with third parties

c. Through deliberate action or gross negligence, a consultant fails to disclose any information which could lead to questions of impartiality

d. While acting against better judgement and intending to secure an advantage for themselves or others, a consultant fails to disclose information which would uncover scientific misconduct committed by another person.

Section 13 Protecting the identity of whistleblowers and the accused, presumption of innocence

(1) All persons involved in a scientific misconduct investigation at Rhine-Waal University of Applied Sciences (refer to Section 16) are obliged to take proper precautions to protect the identities of whistleblowers and the accused and to maintain utmost confidentiality. These obligations also apply to any third-parties involved.

(2) Investigations into scientific misconduct at Rhine-Waal University of Applied Sciences must be conducted according to the principles of presumed innocence and an unbiased consideration of evidence.

(3) Whistleblowers shall not experience any disadvantages for their decision to come forward, particularly with regard to their professional and scientific career tracks, e.g. through additional delays in qualification processes. This also applies to anyone accused of scientific misconduct, provided the misconduct has yet to be verified by official procedure.

Section 14 Ombudsperson

(1) The Executive Board of Rhine-Waal University of Applied Sciences will appoint an ombudsperson and a proxy. Only researchers of integrity with leadership experience are eligible for appointment. The ombudsperson is the central contact for anyone at Rhine-Waal University of Applied Sciences who has questions about good scientific practice or wishes to report possible scientific misconduct. The ombudsperson and their proxy may not be members of any central executive committees during their term in office. Ombudspersons are appointed for a period of three years. Up to two terms in office are permissible. Prior to appointing an ombudsperson and proxy, the Executive Board will provide the Senate with a list of possible candidates as well as an opportunity to respond and make counter-suggestions. The appointment of a new ombudsperson and proxy will be announced publicly within Rhine-Waal University of Applied Sciences.

(2) As an autonomous, neutral and qualified person of trust and integrity, the ombudsperson provides general advising on good scientific practice as well as case-specific advising in incidents of suspected scientific misconduct. The ombudsperson can also advise members of Rhine-Waal University of Applied Sciences, in particular innocent early-career researchers entangled in cases of scientific misconduct, on how to protect or rehabilitate their scientific and personal reputation.

The Executive Board of Rhine-Waal University of Applied Sciences shall provide all necessary content-related support and official recognition for the ombudsperson and their proxy to perform their duties properly.

(3) In the event of a potential bias or conflict of interest with the ombudsperson, the German Research Ombudsman (*Ombudsman für die Wissenschaft*) should be contacted instead. This also applies to potential bias or conflicts of interest with the proxy.

Section 15 Investigation commission

(1) The Executive Board will form an investigation commission when scientific misconduct is alleged to have occurred. This commission will consist of one professor or other experienced researcher from each of the following domains: social science, natural science and engineering. Each member of the commission will also have a designated proxy. Bias must be taken into account when constituting an investigation commission, particularly when the accused has expressed concern about the potential for bias.

(2) The investigation commission will select a chairperson from among its members. The members will serve on the commission for the duration of the investigation. Investigation commissions should strive to be gender balanced. Commissions can consult with additional people as needed.

(3) Investigation commissions must comply with the following:

a. Meetings are closed to the public.

b. Decisions require an absolute majority of votes.

c. Evidence must be considered in an unbiased fashion.

Section 16 Investigations into alleged scientific misconduct

(1) Any member of Rhine-Waal University of Applied Sciences who uncovers specific evidence of scientific misconduct can contact the ombudsperson or the German Research Ombudsman of the German Research Foundation (DFG) [2] . The DFG is an independent body that can be contacted by any researcher in Germany. Its aim is to provide accompanying support to researchers with questions or conflicts relating to good scientific practice and scientific integrity. This also applies to situations in which a whistleblower is unsure whether the observed actions or behaviour truly constitute scientific misconduct or they are not in a position to verify the facts themselves.

(2) Rhine-Waal University of Applied Sciences will investigate every concrete allegation of scientific misconduct within its walls that has been reported to the ombudsperson. This applies to anonymous tips as well, provided they are sufficiently substantiated with solid evidence and facts. The veracity and magnitude of allegations will be investigated first. The ombudsperson will consult with both the accused and the whistleblower (if their identity is known) to determine whether the allegations warrant a full investigation. If all three parties can agree that the suspicion of misconduct is actually unfounded, no investigation will be launched. Otherwise the next step will be a confidential briefing for the Executive Board on the initial findings.

(3) If the ombudsperson determines that an investigation is warranted, the Executive Board will form an investigation commission to assume control. The investigation commission is authorised to take any necessary steps to uncover the truth behind the allegations. This includes obtaining all necessary information, personal statements and, where appropriate, expert opinions from the scientific field in which the misconduct is alleged to have occurred.

(4) The following applies to the whistleblower within the scope of an investigation:

a. Allegations must have been made in good faith.

b. The identity of the whistleblower will not be revealed without their express consent. This does not apply to legal obligations or if the identity of the whistleblower is connected to the allegations in such a way that it is necessary for the accused to know in order to properly defend themselves.

c. The whistleblower will be notified before their identity is revealed to either the accused or a third party not involved with the investigation. The whistleblower can then decide whether to retract the allegations or proceed with the investigation.

d. The identity of the whistleblower is already considered public knowledge if they themselves chose to make accusations of scientific misconduct public. In this case the investigation commission will decide how to manage this breach of confidentiality over the course of the investigation.

e. The whistleblower's identity will remain protected even if the allegations of scientific misconduct are deemed unfounded, provided allegations were not made in bad faith.

(5) Incriminating facts, circumstances and evidence must be disclosed to the accused. Both the whistleblower and the accused must be given an opportunity for an oral statement during each phase of the investigation.

(6) If the investigation is unable to disprove the alleged scientific misconduct, the Executive Board will be briefed accordingly before deciding how to proceed. The whistleblower and the accused must be informed of the Executive Board's decision in writing. This written notification must include the main reasons behind the decision.

(7) As a general rule, investigations should conclude within three months. This can vary when justified on a case-by-case basis. If the investigation commission determines that an investigation cannot be concluded within three months, it must notify all involved parties of the expected duration of the investigation.

(8) Cases of potential student misconduct in essays, term papers, thesis papers or other scholarly work at Rhine-Waal University of Applied Sciences fall under the responsibility of the administering examiner and the relevant Examination Board. Scientific misconduct will be punished in accordance with the applicable examination regulations.

[2] https://ombudsman-fuer-die-wissenschaft.de/?lang=en (Accessed 29 Sept. 2020)

Section 17 Consequences for verified cases of scientific misconduct

(1) Confirmed cases of scientific misconduct can result in various consequences (work, employment, academic, legal or criminal), depending on severity. Consequences can include, in particular:

a. Formal reprimand

b. (Extra)ordinary termination

c. Contract dissolution

d. Removal from a post

e. Ban from the premises

f. Property repossession claims

g. Remedy claims and prohibitory injunctions on the grounds of copyright, personality rights, patent rights and competition rights

h. Claims for restitution

i. Claims for damages.

(2) If scientific misconduct occurs within the scope of third-party funded research, the funding provider will be notified. All other third parties with a justified interest in the decision will also be notified.

IV Concluding provisions

Section 18 Entry into force

These Guidelines for Good Scientific Practice shall enter into force on the day after their publication in German in the Official Notices of Rhine-Waal University of Applied Sciences. Upon entering into force, the previous Guidelines for Good Scientific Practice (dated 30 April 2010) shall expire.

Note: These Guidelines for Good Scientific Practice entered into force on 23 July 2022.