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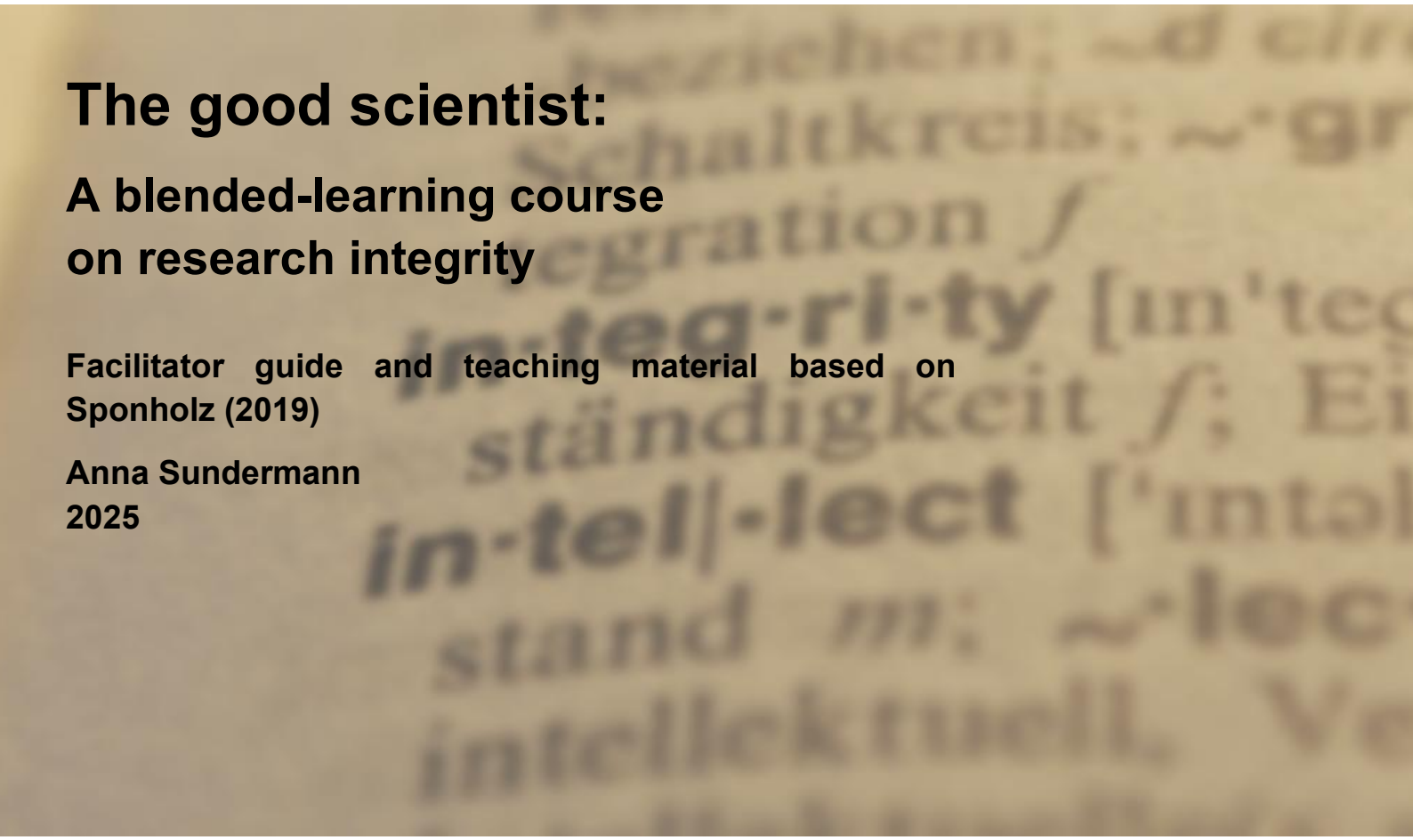

The good scientist:

A blended-learning course on research integrity

Facilitator guide and teaching material based on Sponholz (2019)

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METADATEN

Zusammenfassung/Abstract

Deutsch

The good scientist: Ein disziplinübergreifendes Lernmaterial zu guter wissenschaftlicher Praxis und Forschungsintegrität

Der Kurs ist als blended-Learning-Lehrkonzept mit flipped classroom-Inhalten für Promovierende aller Fachrichtungen zur reflexiven Auseinandersetzung mit Werten wissenschaftlicher Integrität und Maßnahmen zur Einhaltung guter wissenschaftlicher Praxis konzipiert. Er wurde als verpflichtender Anteil des Onboardings im Promotionsstudium an der Leuphana Universität pilotiert.

Das Format kombiniert selbstorganisiertes Lernen mit synchronen Austauschformaten und dient der Reflexion:

- der ethischen Grundlagen und Standards wissenschaftlichen Arbeitens (DFG-Leitlinien, Leuphana-Standards)
- des eigenen Forschungsprozesses und den damit verbundenen Integritätsfragen
- der eigenen Rolle und Verantwortung im Wissenschaftssystem
- in Bezug auf Diversität, Macht und Inklusion in der akademischen Praxis

Lehr-Lernziele:

Fachkompetenzen:

- Kenntnisse zu Normen und Standards guter wissenschaftlicher Praxis (national und international)
- Verständnis des deutschen Wissenschaftssystems und der Leuphana-spezifischen Strukturen
- Fähigkeit zur kritischen Analyse unterschiedlicher Integritätsstandards in interdisziplinären Settings

Methodenkompetenzen:

- Konzeption, Durchführung und Rezeption von Forschungsprojekten nach ethischen Richtlinien
- Strategien zur Konfliktlösung und zum Umgang mit wissenschaftlichem Fehlverhalten

Sozial- und Selbstkompetenzen:

- Reflexion eigener Werte und Normen sowie unterschiedlicher Perspektiven
- Entwicklung einer ethisch-reflexiven Haltung gegenüber der eigenen Forschungspraxis
- Bewusstsein für Diversität, Machtverhältnisse und Inklusion in der Wissenschaft
- Selbstwirksamkeit im Umgang mit ethischen Herausforderungen

Didaktisches Konzept:

Die Didaktik des Kurses ist nach dem Prinzip des *Constructive Alignment* konstruiert:

- 10 wöchentliche Selbstlerneinheiten mit Lehrvideos, Literaturhinweisen und Assignments
- Peer Integrity Dialogue in selbstorganisierten Kleingruppen
- Lecturer Check-ins mit Fallstudien und Expert*innengesprächen (u.a. mit Ombudsperson, Datenmanagement-Expert*innen, Diversity-Expert*innen)
- Reflexiver Abschlussbericht als Workbook für die eigene Forschungspraxis

Themen:

- Einführung in Forschungsintegrität und wissenschaftliche Werte
- Wissenschaftliches Fehlverhalten: Erkennen, Vermeiden, Handeln
- Daten- und Referenzmanagement
- Publikationsprozess und Autorschaft
- Kollaborative Forschung und Interessenkonflikte
- Forschung mit Menschen und KI
- Konfliktlösung und Supervision
- Diversität und Inklusion in der Wissenschaft

Klassifizierung

Inhaltstyp: Aufgabenorientiertes Material

Materialart: Lehrmaterial und Instruktionen zur Nutzung

Schlagworte: gute wissenschaftliche Praxis, Promotionsstudium, wissenschaftliche Integrität, Forschungsethik, DFG-Standards

Didaktik

Veranstaltungsformat: Pflichtkurs (5 ECTS/150 Stunden Workload)

Teilnehmendenanzahl: bis 30 Teilnehmende pro Lehrenden

Niveau: Promovierende im ersten Jahr; Inhalte adaptierbar für Masterstudierende

Didaktische Funktion: Onboarding in eine integre und ethisch einwandfreie Wissenschaftskultur, wissenschaftlichem Fehlverhalten vorbeugen, Sozialisierung in einer Gemeinschaft aus Promovierenden, Transfer- und Anwendung, Handlungsbefähigung und Resilienz

Voraussetzungen: Grundlegende Kenntnisse zu Forschungsprozessen; Exposé bzw. Forschungsidee eingereicht

Kurssprache: Englisch

English

The Good Scientist: Interdisciplinary learning material on good scientific practice and research integrity

A blended learning concept with flipped classroom content for doctoral candidates of all disciplines, designed to encourage reflective engagement with norms, values, standards and measures for adhering to good scientific practice as a compulsory module in the first or second semester.

The format combines self-organized learning with synchronous exchange formats and serves to reflect on:

- the ethical foundations and standards of scientific work (DFG guidelines, Leuphana standards)
- one's own research process and the associated integrity issues
- one's own role and responsibility in the scientific system
- diversity, power and inclusion in academic practice

Teaching and learning objectives:

Subject-specific skills:

- Knowledge of norms and standards of good scientific practice (national and international)
- Understanding of the German scientific system and Leuphana-specific structures
- Ability to critically analyze different integrity standards in interdisciplinary settings

Methodological skills:

- Design, implementation and reception of research projects in accordance with ethical guidelines
- Strategies for conflict resolution and dealing with scientific misconduct

Social and personal skills:

- Reflection on own values and norms as well as different perspectives
- Development of an ethically reflective attitude towards own research practice
- Awareness of diversity, power relations and inclusion in science
- Self-efficacy in dealing with ethical challenges

Didactic concept:

The course is based on the principle of constructive alignment and includes:

- 10 weekly self-study units with video lectures, readings and assignments
- Peer integrity dialogue in self-organized small groups
- Lecturer checkins with case studies and expert discussions (including ombudspersons, data management experts, diversity experts)
- Reflective final report as a workbook for own research practice

Topics:

- Introduction to research integrity and scientific values
- Scientific misconduct: recognizing, avoiding, acting
- Data and reference management
- Publication process and authorship
- Collaborative research and conflicts of interest
- Research with humans and AI
- Conflict resolution and supervision
- Diversity and inclusion in science

Classification

Content type: Task-oriented material

Material type: Teaching material and instructions for use

Keywords: good scientific practice, doctoral studies, scientific integrity, research ethics, DFG standards

Didactics

Event format: mandatory course (5 ECTS/150 hours workload)

Number of participants: up to 30 participants per teacher

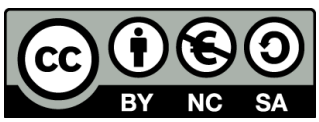
Level: First-year doctoral candidates; content adaptable for master's candidates

Didactic function: Onboarding into an ethical and integrity-based scientific culture, preventing scientific misconduct, socialization in a community of doctoral candidates, transfer and application, empowerment and resilience

Prerequisites: Basic knowledge of research processes; exposé or research idea submitted

Course language: English

Content



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1. Abstract

This document provides insight into the teaching concept of the course *The good scientist: A course on research integrity* for doctoral candidates at Leuphana University Lüneburg. The blended learning format was designed, implemented, and evaluated as part of the Digital Transformation Lab for Teaching and Learning, funded by the Foundation for Innovation in Higher Education.

The course is a compulsory part of the Engaging with Research Ethics and comprises 150 hours of workload over ten weeks in the first year of the doctoral courses and is aimed at up to 45 doctoral candidates from all subject areas. It provides knowledge on good scientific practice and research integrity based on the DFG code of conduct (German Research Foundation) and institutional standards (DFG, 2024). The content and structure is based on the recommendations of the curriculum Sponholz (2019) *Good Scientific Practice for Courses in Science and Medicine recommended* by the Ombuds Committee for Research Integrity in Germany. The course language is English.

The teaching material presents the learning objectives, didactic concept, course structure and assessment approaches. The format combines ten weekly self-study units with peer integrity dialogues, six synchronous lecturer check-ins and a reflective final report. Through case studies, application tasks and exchanges in small groups, doctoral candidates not only acquire knowledge but also develop an ethically reflective attitude and practical competencies for their entire research process.

The Open Educational Resource (OER) material is available for free use and adaptation under the CC BY-NC-SA 4.0 International license (https://creativecommons.org/licenses/by-nc-sa/4.0/) and enables actors from other universities to use the concept and material for research ethics courses. It provides interdisciplinary learning content, reflection tasks and assessment templates. In addition, the course concept and material are suitable as an onboarding for doctoral candidates, as it suggests how to include institution specific information on institutional structures and support services, thus facilitating participants' entry into the respective research institution.

2. Aim and concept

The interdisciplinary course is embedded in the compulsory module *Engaging with research ethics* in the first year of the doctoral courses at Leuphana University Lüneburg and pursues several interrelated goals: Its primary purpose is to enable doctoral candidates to engage in responsible research practices and to onboard them into an integrity-based scientific research culture. By being offered as part of the onboarding process at the Graduate School, scientific misconduct is addressed preventively before critical situations arise in the participants' own research practice. The course is designed as a toolbox that provides doctoral candidates with

a broad spectrum of knowledge and action strategies for good scientific practice. In addition to the topics that are immediately relevant at the beginning of a research project (such as ethically correct data management or avoiding plagiarism), the course also covers content that becomes significant in later phases of the doctoral research process or that is part of the logic of other research cultures. The aim is to sensitize doctoral candidates to these diverse situations at an early stage and to develop and demonstrate options for action. Permanent access to the course material through Moodle as the learning management platform makes it possible to revisit the content at any later stage of the doctoral courses and to use it in a targeted manner when it becomes specifically relevant.

Thus, the course aims to introduce basic actionable knowledge of good scientific practice in accordance with the DFG code of conduct through appropriate reflection exercises, case studies and application tasks. The intensive engagement with ethical challenges throughout the research process is guided by the ten self-study units. On the other hand, the course is designed to promote self-competence and action competence, such as critical-reflective thinking, judgment, self-efficacy and resilience in dealing with ethical dilemmas in the research process. This includes assessing situations, weighing values against each other and, above all, being able to deal with the uncertainties and gray areas of scientific practice. Doctoral candidates are given the tools to avoid and recognize scientific misconduct and to act self-effectively and appropriately in cases of suspicion. They learn about institutional services, for example the work of the ombudspersons and the ethics committee and options for action and are trained in conflict resolution strategies. Thus, the course aims to make doctoral candidates resilient, regardless of their departmental structures, and to enable them to act independently and in an informed manner, even in difficult situations.

In addition, the course promotes socialization in a community of doctoral candidates from different subject areas through peer integrity dialogues and interactive learning activities. The exchange enables networking, familiarization with diverging perspectives on research ethics and creates a supportive network for the entire doctoral phase.

Structure

- **Preparation**: The course starts with an introductory session to introduce the content, form groups and a discussion on values and measures to ensure good scientific practice.
- **Main phase:** Ten weeks of self-studying units (video lectures, readings, individual assignments), accompanying peer integrity dialogues and four synchronous lecturer check-ins, sometimes with facilitated discussions with institutional experts for reflection, guided transfer and discussion of the content from the self-studying units.
- **Conclusion**: A reflective face-to-face session for joint discussion and reflection of the learning outcomes from the previous ten weeks and, as proof of performance, a workbook that not only contains the ten reflection and application assignments from the self-studying units, but also an individual reflection report on the transfer of content into one's own research practice.

Foundations for Good Research Practice

This course concept is grounded in the German Research Foundation's code of conduct *Guidelines for Safeguarding Good Research Practice*, which defines good research practice as honest, diligent and conscientious research conduct that maintains scientific integrity and strengthens public trust in scientific knowledge (DFG, 2024). Scientific integrity is understood as the individual commitment of each researcher and the institutional commitment of research institutions to adhere to established norms and standards based on core values, such as reliability, honesty, respect and accountability (ALLEA, 2023).

Research ethics competencies

The selection of learning objectives for this research ethics course and content draws primarily on two comprehensive competence frameworks. The UniWinD *Competence Framework for early career scientists* positions knowledge and consideration of good research practice as specialist and expert knowledge typically expected from early-career researchers (Vurgun et al., 2019). Importantly, it also frames research practice under attitudes, values and dispositions, linking adherence to these norms and standards with doctoral candidates' professional stance and suggesting that such competencies should be acquired particularly during the entry phase of doctoral studies.

The *European Competence Framework for Researchers* (European Commission, 2022a, 2022b) provides a more differentiated structure, identifying foundational and intermediate competencies across seven main facets: *doing research, managing research, making impact, self-management, cognitive abilities, working with others, managing research tools*. The relevant experience levels within these facets are foundational and intermediate, as these represent the core competencies that doctoral candidates should develop during their first year of doctoral studies. Notably, however, neither framework provides a detailed breakdown of the specific competencies doctoral candidates must acquire as prerequisites for good research practice. The competencies *apply research ethics and integrity principles* is classified under the cluster **doing research**, emphasizing that researchers have "a basic understanding of ethical conduct of research" (p. 16) and are "alert and attentive to falsification and plagiarism" (p.16) or know "about basic AI tools and the benefits, risks and limitations of their use in research" (p.17) or include "GDPR and privacy requirements in own research activity" (p. 15).

Beyond this core competence, the framework identifies numerous subfacets across its main competence areas that are indirectly relevant to good scientific practice. Within the competency cluster *managing research*, for example, foundational subfacets include the abilities to "provide constructive criticism" (p.3), "effectively assess and reflect over own research process" (p. 3), or "evaluate basic research proposals and the quality of primary and secondary research data" (p.3). The researcher should be "familiar with current research information systems and the pros and cons with open and closed access publication channels" (p. 3) and "produces publishable material and actively seeks appropriate outlets for it" (p.3), "understanding the processes of publication both in the traditional and in the Open Science paradigm" (p. 4), "understanding how academics communicate research results" (p. 4), and be "aware of the diverse outlets for publications" (p. 4).

Thus, the framework justifies the broad selection of generic learning objectives and topics that enable the comprehensive acquisition of competencies for good scientific practice for the individual empowerment of early career researchers to support high quality research output and individual career development.

Content selection and adaptation

Against the background of the *European Competence Framework for Researchers* the thematic selection and associated learning objectives of this course concept are primarily based on the standard curriculum proposed by Sponholz (2019), which provides comprehensive teaching materials for good research practice at German universities and is recommended by the *Ombuds Committee for Research Integrity in Germany*. However, three critical adaptations have been made to this framework to tailor this course concept to the needs of emerging researchers at Leuphana University:

First, the sequence and content of topics have been adjusted to meet the specific needs of the doctoral courses at Leuphana University Lüneburg, which serves doctoral candidates from five faculties. Since candidates rarely conduct animal experiments and few to none conduct clinical trials with humans, these modules have been replaced with content on research with AI and a dedicated focus on diversity and inclusion. Both modifications align with the European Competence Framework for Researchers, which specifically identifies the relevance of competencies in these areas.

Regarding AI integration, the framework emphasizes that researchers at foundational levels should “understand what AI is (e.g., machine learning, neural networks, natural language processing)”, “know about basic AI tools and the benefits, risks and limitations of their use in the research”, “recognize ethical concerns and research integrity challenges related to AI use in research” and “demonstrate a willingness to learn about AI and its integration into the research workflows” (European Commission, 2022a, p. 17). These competency facets are increasingly recognized as essential for maintaining research integrity in an era of rapid technological advancement.

The inclusion of diversity and antibias content responds to the framework’s emphasis on competency facets such as “promote inclusion and diversity”, where researchers should “appreciate the importance of diversity and how it benefits complex research projects”, “be open-minded about diverging perspectives and sensible and respectful to individual differences” and “understand diversity and equality requirements of institutions” (European Commission, 2022a, p. 12). Additionally, the framework highlights that foundational disciplinary expertise includes supporting “awareness of societal, political, ethical and integrity related aspects of knowledge creation” (European Commission, 2022a, p. 15)

Second, particular emphasis has been placed on adapting content to the institutional conditions of Leuphana University Lüneburg.

Third, all content has been implemented in English and extended to a 5 ECTS course format (150 hours workload) to meet the requirements of doctoral courses at the Leuphana Graduate School.

Content selection and emphasis beyond these structural adaptations largely follow Sponholz (2019), while also reflecting the professional judgment of the unit authors. The content has been coordinated and approved through a roundtable discussion with the University of Lüneburg's Ethics Council and other relevant stakeholders, including ombudspersons and representatives for equality and ombudspersons for persons with disabilities.

Pedagogical design principles

While Sponholz (2019) already suggests organizing the course on a doctoral level in larger blocks with theme-based modules, the didactic concept and selection of teaching and learning activities of this course is also based on the evidence-based recommendations a recent meta-analysis of research integrity education (Katsarov et al., 2022). Key findings informing this course design include:

- Shorter courses demonstrate lower effectiveness, supporting the 5 ECTS format suggesting that the course should cover a significant timespan of the first year of a doctorate to be effective
- Teaching approaches must align with specific learning outcomes suggesting defining the ethics related learning outcomes clearly
- Greatest effectiveness is achieved when individual and group-based learning activities are combined, suggesting a well-designed mix of different learning activities best supports competence acquisition
- Interactive methods requiring knowledge application positively affect learning outcomes suggesting that the course should go beyond discussing different norms and values
- Heterogeneous versus mono-disciplinary groups show no difference in learning outcomes suggesting that it is not harmful to learn in heterogenous groups
- Excessive repetition is unrelated to success, suggesting that
- Blended-learning and online learning show no negative effects on learning outcomes, suggesting that knowledge acquisition can effectively occur online

The distinctive feature of the course concept of the good scientist lies in its systematic implementation as a blended-learning course that uses a modular structure. Each of the ten self-study units is designed for interactive knowledge acquisition with facilitated interactive sessions for knowledge application and reflection, allowing for flexible integration into university onboarding frameworks and doctoral courses (Table 1). The content and learning activities for the self-study units were systematically researched through desk research over two months in the year 2022, drawing substantially on materials provided by the Ombuds

Committee for research integrity in Germany, which are made available as open educational resources for use and adaptation (Ombudsgremium – OWID, 2025). All course materials, including didactic suggestions for teaching activities and assessment proposals, are likewise made comprehensively available as OER to facilitate adoption and adaptation by other institutions.

Table 1. Comparison between the content of Sponholz (2019) and the good scientist (Sundermann, 2025).

Unit	Sponholz, 2019 (German titles)	The good scientist
1	Einführung in die gute wissenschaftliche Praxis	Introduction to research integrity
2	Fehlverhalten in der Forschung	Integrity in the research process
3	Umgang mit Daten und Quellen	Scientific misconduct
4	Veröffentlichungsprozess und Autorschaft	Data and reference management
5	Verantwortung für Betreuerinnen/Betreuern und Betreuten	Publishing process and authorship
6	Forschung am Menschen, klinische Studien	Collaborative research and conflicts of interest
7	Tierversuche	Research with humans and research with AI
8	Interessenskonflikte, Wissenschaftskooperation	Mentoring and Supervision
9	Konfliktregelung	Conflict resolution
10	-	Diversity and inclusion training

3. Overarching learning objectives

The learning objectives of this course are systematically derived from the competence frameworks discussed above, particularly oriented on the European Competence Framework for Researchers and based on Sponholz (2019). They are structured according to four competence dimensions that reflect the multifaceted nature of research integrity: **subject-matter and professional competencies** (knowledge and understanding), **methodological competencies** (application and skills), **attitudes and values** (professional stance and reflexivity) and **self-management and action competencies** (personal responsibility and implementation).

This structure acknowledges that research integrity extends beyond mere knowledge acquisition to encompass the development of critical reflection, ethical attitudes and practical implementation. As emphasized by the UniWinD framework, good research practice must be understood both as specialist knowledge and as a professional attitude that doctoral candidates develop during their early career phase. The learning objectives are designed to be achievable at the foundational and intermediate level appropriate for early-career

researchers, while simultaneously providing a foundation for lifelong professional development as advocates for research integrity principles.

The specific learning objectives are organized as follows:

Subject-matter and professional competencies

- Knowledge of fundamental norms and values of good research practice
- Understanding of national and international developments and standards
- Knowledge of the research system in Germany and institutional structures
- Ability to critically reflect on different conceptions, values and norms across various disciplines

Methodological competencies

- Conception, implementation, management and evaluation of research projects according to ethical guidelines
- Development of data management plans and preparation of ethics applications
- Evaluation of research based on ethical principles
- Strategies for resolving conflicts with supervisors, collaborators, or colleagues
- Identification and acknowledgment of biases in one's own and others' research practices

Attitudes and values

- Development of an ethically reflexive stance toward one's own research
- Awareness and respect for different perspectives, values and norms
- Positive attitude toward communication, cooperation and transparency
- Positive attitude toward diversity in everyday research practice
- Critical reflection on power relations and diversity in academia
- Constant vigilance regarding challenges in daily academic work

Self-management and action competencies

- Assumption of personal responsibility as well as responsibility for others
- Ability to engage in open, professional discussions about research practice
- Self-competence in dealing with challenges of collaborative research work
- Implementation of inclusive practices to promote diverse perspectives
- Resilience and self-efficacy in ethically challenging situations
- Ability to appropriately discuss different values, norms and value hierarchies

5 Didactic approach and learning theory principles

The didactic approach of the course is based on a cognitive-constructivist and humanistic understanding of learning and uses the idea of *eclectic pedagogy* by combining different theories and concepts to meet the different learning objectives (Zierer, 2011). Learning is understood as a social and a reflexive process in which different perspectives on scientific integrity serve as a learning resource. Building on this understanding of teaching and learning and in line with the learning objectives, the learning activities in this course concept have been selected based on three learning theories.

Learning objective 1: In-depth knowledge of good scientific practice and development of an ethically reflective identity as a researcher

The course aims to ensure that participants not only acquire knowledge about good scientific practice but also develop an identity as researchers and critically question their assumptions about scientific integrity. *Transformative learning theory* states how such fundamental changes become possible: Learners must critically reflect on their existing assumptions, question them in discourse with others and test them through action (Mezirow, 2008). The following teaching and learning activities are grounded in the idea of this theory: In the course, doctoral candidates are specifically confronted with ethical dilemmas and challenges from research practice that are less structured and are designed for an interactive and collaborative learning process (Stevens-Long & Barner, 2012). Additionally, the structure of the course provides diverse opportunities for reflective exchange in an interdisciplinary group. The doctoral candidates can further develop their communication and discursive skills in respectful interaction with different disciplinary perspectives (King & Strohm Kitchener, 2001). Self-study phases with subsequent transfer activities and discussion formats enable critical reflection on the consequences of academic practices. This design supports the doctoral candidates in developing options for action for ambivalent situations in their everyday research by practicing those options in role plays.

Learning objective 2: Critical awareness of structural conditions and power relations and of the causes of misconduct in science

The aim of the course is for doctoral candidates to develop a critical awareness of the political, social and economic conditions that influence academic practice and are seen as major causes for misconduct, such as publication pressure, biases in review processes and institutional power structures. Critical pedagogy emphasizes that learners can only perceive and critically examine social, political and economic contradictions in their reality if they are confronted with different perspectives and actively deal with them (Blake & Masschelein, 2003). This results in the following teaching and learning activities: The course follows a two-stage process in which intensive application and experimentation phases are always followed by a phase of critical reflection and structured dialog. The deliberate composition of interdisciplinary groups ensures that different disciplinary and cultural perspectives on structural problems are brought in. In moderate discussions, competencies for dealing with uncertain situations are developed and resilient behavioral options for adhering to good scientific practice are worked out.

Learning objective 3: Development of professional competence in research practice

The course aims to help doctoral candidates develop their professional identity as academics. In this course communities of practice are understood as groups in which learning takes place as a social negotiation process around a common object (Wenger, 2000). In these communities, learners can test their competencies, relate them to others and develop their identity through intensive engagement with the community. For doctoral candidates - especially international ones - who often experience doctoral studies as an isolated activity, such communities support not only professionalization but also personal well-being (Ezebilo, 2012; Laufer & Gorup, 2019; Phelps, 2016). In the peer integrity dialogue participants critically exchange their subject specific perspectives on the given prompts. The formal course structure specifically supports the formation of this community, thus deviating from the original definition of informal communities, but enabling their formation in the temporary course context. Through a high degree of individual autonomy (self-study phases, free organization of peer meetings, permanent access to materials) and at the same time structured exchange formats, doctoral candidates can actively test their identity as prospective scientists in interdisciplinary contexts.

4. Didactic design

These learning theory principles are implemented through a didactic design that consistently follows the principle of constructive alignment (Biggs, 2003). Therefor the course didactics are composed of a variety of learning activities facilitating the transfer of the content into participants' research practice. Learning objectives, teaching methods and activities as well as assessment formats are systematically coordinated to ensure that all learning activities are aligned with the defined learning objectives.

The course relies on a blended learning approach that combines asynchronous digital self-study phases with synchronous online and classroom formats to be able to design learning as individually and flexibly as possible for doctoral candidates in their diverse life situations (e.g., business trips, care commitments, part-time doctorates). It can also be assumed that doctoral candidates are experienced learners who already have a great deal of routine and expertise in acquiring knowledge, so that the learning activities in this course focus on independence. The integration of different learning spaces and times makes it possible to utilize the advantages of different teaching modes: While the asynchronous mode ensures flexibility and individual learning pace, the synchronous mode promotes social exchange, joint reflection and networking in a community of practice. The two on-campus sessions create important physical meeting spaces for networking and commitment, while the online phases overcome spatial barriers and facilitate compatibility with other commitments of doctoral candidates (Figure 1).

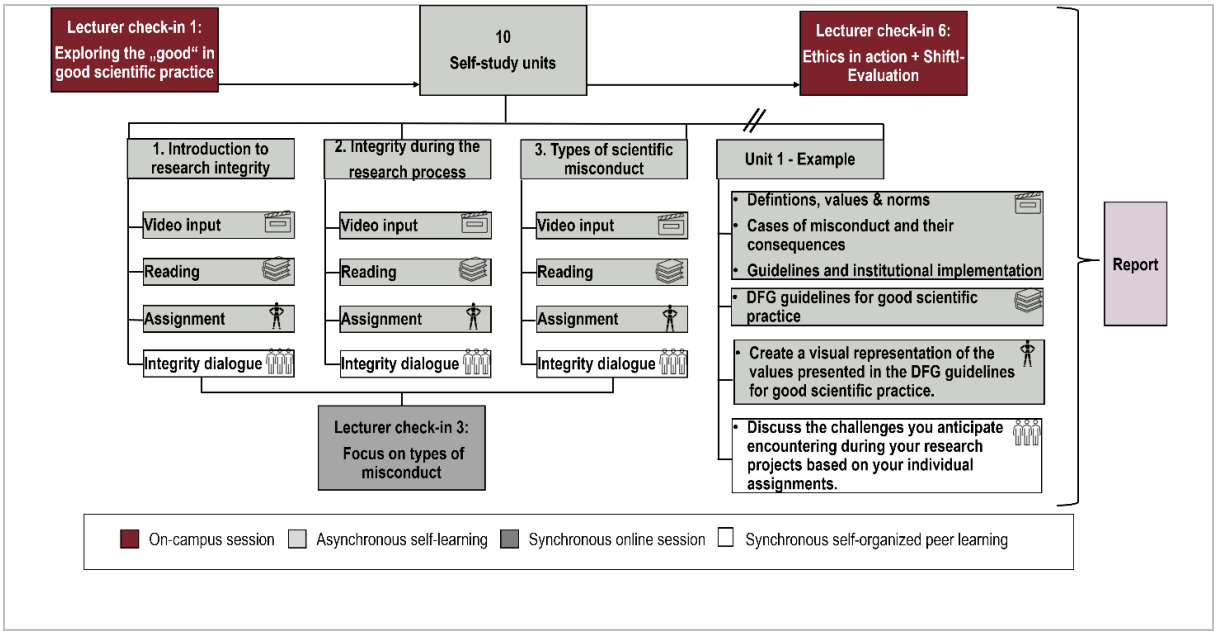

Figure 1. Schematic representation of the course structure of the good scientist (own representation).

The principle of the flipped classroom is implemented within this blended learning approach: Knowledge is provided asynchronously through pre-recorded video lectures, readings and multimedia learning materials, while the synchronous sessions are used for discussion, in-depth study and working on case studies. The asynchronous part of the course enables doctoral candidates to acquire theoretical foundations at their own pace and emphasizes the doctoral candidates' personal responsibility for their own research and development process.

The mix of methods combines various didactic approaches to appeal to different types of learners and addresses the competence objectives on several levels:

- Self-study units (e.g., video lectures, readings) introduce factual knowledge
- LCI's provide application and in-depth exploration of key topics and contact with institutional services
- Application tasks (case studies, dilemma discussions, creation of plans) for transfer into your own research practice
- Peer integrity dialogues in small groups for interdisciplinary exchange and the development of a reflective attitude
- Reflection report as a workbook for continuous self-reflection and as reference work for the entire doctoral phase

The LCI's each combine three self-study units and focus on a topic that is particularly in demand by doctoral candidates at the beginning of their doctorate. The first check-in (week 3) deals with various forms of academic misconduct, the second (week 6) with authorship and publication processes as well as reference and data management with discussing pressing issues with experts of open access publishing and data management, the third (week 9) with

mentoring, supervision and conflict resolution and the fourth (week 10) with diversity and inclusion. This thematic focus enables an in-depth, dialogical discussion of issues that are particularly relevant for doctoral candidates in their current phase, e.g., power relations in the doctoral candidate and supervisor relationship.

Regarding the workload the classroom and online phases are deliberately balanced to promote self-directed but also flexible learning and at the same time enable social interaction and networking outside of formal employment relationships in working groups.

In total, the Engaging with Research Ethics module as part of the doctoral courses at Leuphana Graduate School comprises 150 hours of work, which corresponds to 5 ECTS credits (Table 2). Ten hours are set aside for the opening days as part of the general onboarding at the Leuphana Graduate School. The remaining 140 hours of time, with about 50% asynchronous self-study (self-study units, readings, assignments, reflection report), 25% on synchronous online formats (peer dialogues, lecturer check-ins) and 25% on preparation and follow-up as well as the two face-to-face sessions are allocated to the activities in the semester.

Table 2. Overview of the workload distribution of the course the good scientist

Activities	Workload (hours)*	Description
Opening days	10	General onboarding to the doctoral courses
Lecturer check-in 1: Exploring the *good* in good scientific practice	3,5	1 On-Campus session as part of the opening days; Content: course organization, getting to know the group, focus on norms, principles and values of research integrity
Lecturer check-in 2-5	16	4 Online sessions à 240 minutes, Content: Focus on scientific misconduct, authorship, data and reference management, supervision and conflict resolution, focus on diversity and inclusion in research culture
Lecturer check-in 6: Ethics in action	4,5	1 On-Campus session; Content: Reflective meeting with lecturer with focus on active knowledge application
Self-study units	56	10 self-study units à 340 minutes
Peer integrity dialogue	15	10 self-organized peer meetings à 90 minutes to deepen content and exchange perspectives
Assignments	30	10 reflective assignments à 180 minutes to transfer the content to real-world cases and on transferring the content to the doctoral thesis
Reflection report + processing the workbook	15	Reflection of the learning process and application of learning outcomes to doctoral research process
Total	**150**	

Note: The information on workload is based on estimates. Individual processing times may vary. Training periods can be adjusted as needed. Note: Ten hours of workload still need to be allocated to additional activities (e.g., onboarding week) to correspond to 5 ECTS.

5. The course plan of the good scientist

This section outlines the complete course structure, consisting of ten self-study units including weekly reflective assignments and instructions for facilitating the peer integrity dialogue adapted from Sponholz (2019) and six interactive LCI's that represent the innovative instructional design of this course. The course timeline is presented in Figure 2.

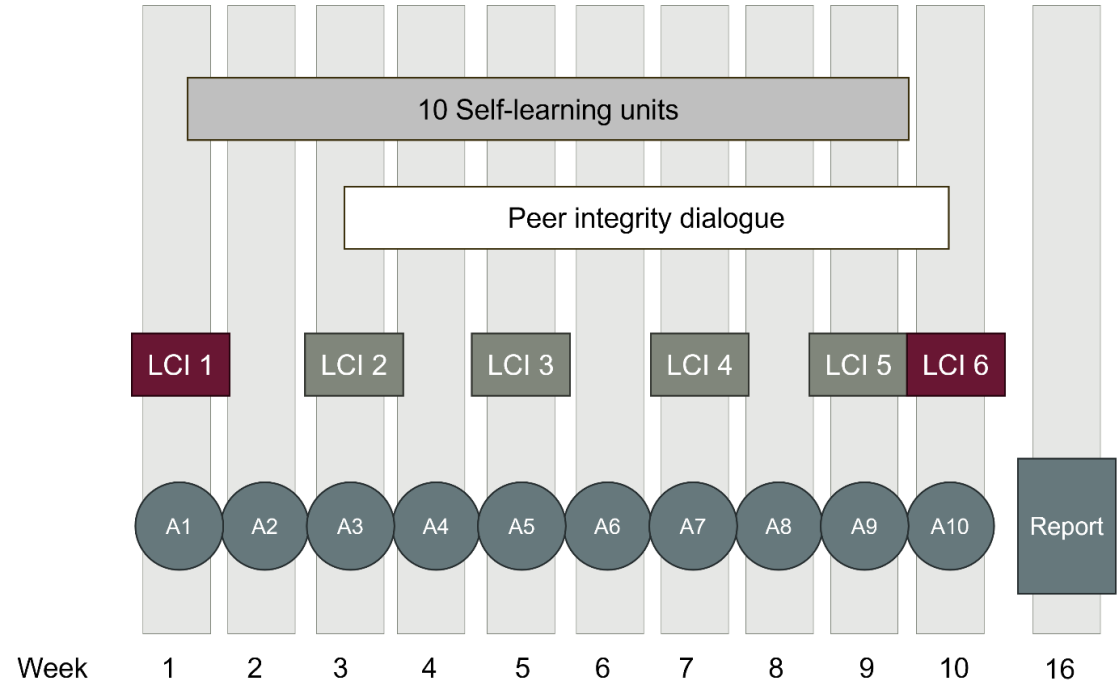

Figure 2. Course timeline the good scientist. Note: LCI = Lecturer check-ins. A = Assignments.

Part A: Self-study units

The ten self-study units are based on Sponholz (2019). The self-study units are implemented in Moodle, a learning management platform, and remain accessible to doctoral candidates beyond the course period. Each unit has the same structure comprising a video lecture, readings and an individual post course assignment as well as a prompt for the peer integrity dialogue.

Descriptions of the four main content forms of each unit for participants:

Lecture: The video lectures are designed to introduce key concepts of research integrity and explain measures of good scientific practice before joint sessions. These videos prepare you for active participation in class discussions, case study analyses and collaborative problem-solving activities.

Reading: The core readings are carefully selected to deepen your understanding of research integrity and ethics. These texts provide either foundational knowledge or critical insights and perspectives that will enhance your engagement in discussions and inform your reflection assignments.

Individual post course assignment: Time to put on your thinking cap! These mandatory reflection assignments are an invitation to apply what you've learned to your own research project. Each assignment will challenge you to connect the dots of the different units.

Peer integrity dialogue: The peer integrity dialogue prompts are here to help you connect with fellow doctoral candidates across disciplines, fostering insightful discussions on research ethics. Each self-study unit offers prompts to guide your self-organized group meetings and to deepen the interdisciplinary exchange on research integrity and good scientific practice.

Week 1: Introduction to research integrity

Learning Objectives	• Knowledge of the guidelines and values of good scientific practice • Ability to understand the implications of the guidelines and the German academic system for research integrity • Perceiving different views on research integrity and learning to justify one's own views • Reflect on the application of these norms and values in everyday practice
Topics	• Integrity as a professional working attitude • Important Values, norms and guidelines • German research landscape • Institutional services
Reading	DFG. (2024). Guidelines for safeguarding good research practice: Code of conduct (revised version 1.2). Deutsche Forschungsgemeinschaft. https://doi.org/10.5281/zenodo.14281892
Assignment	What is the relationship of the core values and norms presented in Unit 1 and the measures presented in the DFG (German Research Foundation) Code of Conduct for Safeguarding Good Research Practice? Please read the code of conduct. Create a visual representation (such as an infographic) illustrating your understanding of the intersections between the ethical values presented in Unit 1 and the measures presented in the DFG code of conduct.
Peer integrity dialogue	What are the main ethical challenges you anticipate encountering in your doctoral research project? We suggest preparing for this group exchange by filling in the template on the first two pages of the workbook. It is suggested to share them with your group members in form of a short slide etc. to give your group members a feeling for the different PhD projects. Each of you can take turns presenting a brief overview of their research project and potential ethical considerations they foresee. Group members can then offer feedback, suggestions, or pose questions to help each other think critically about ethical issues within their respective projects during the next years of your doctoral journey.

Week 2: Research integrity during the research process

Learning objectives	• To understand the different aspects relevant for research integrity • Awareness of the values and motivations behind one's research project • Knowing about the challenges and good practices related to research ethics at all stages of the research cycle • Awareness of the relevance of well-being as a vital aspect of research ethics
Topics	• Reflect on the application of research integrity norms and values in everyday practice • Risks and the implementation of good scientific practices • Importance of physical and mental well-being as a form of good scientific practice
Reading	Kennedy, M.-R., Deans, Z., Ampollini, I., Breit, E., Bucchi, M., Seppel, K., Vie, K. J., & Meulen, R. T. (2023). "It is Very Difficult for us to Separate Ourselves from this System": Views of European Researchers, Research Managers, Administrators and Governance Advisors on Structural and Institutional Influences on Research Integrity. Journal of Academic Ethics, 21(3), 471–495. https://doi.org/10.1007/s10805-022-09469-x
Assignment	For each of the steps of your individual doctoral project, outline where the biggest pitfalls lie in terms of good scientific practice (bullet points on a table will suffice). (approx. 200 to 500 words)
Peer integrity dialogue	In your peer group, you could discuss the following questions and share your experiences and ideas: ○ How have you been coping with stress-related situations in the past? Which strategies have you developed? ○ Which stressful situations and challenges are you expecting to encounter during your doctoral studies? What do you plan to do to keep your balance during the doctoral journey? Use your peers as sounding boards and as sources of recommendations and ideas for exchanging ideas and strategies and gain together inspiration to take care of yourself during the research process.

Week 3: Scientific misconduct

Learning objectives	• Knowing about the different forms of misconduct • Knowing the difference between misconduct • Knowing about regulations and policies against misconduct at various levels (intuitional, national and international) • Knowing about the reasons why researchers commit misconduct • Awareness of one's responsibilities as a scientist and what to do in case of a suspected case of scientific misconduct	
Topics	Part I • Introduction to scientific misconduct • Different forms of misconduct • Questionable research practices • Fraud and fabrication • Honest mistakes • Reasons behind misconduct • Conflict resolutions	Part II • Introduction to plagiarism and how to avoid it
Reading	ALLEA. (2023). The European Code of Conduct for Research Integrity. ALLEA - All European Academies. https://doi.org/10.26356/ECoC Resnik, D. B., & Stewart, C. N. (2012). Misconduct versus Honest Error and Scientific Disagreement. Accountability in research, 19(1), 56–63. https://doi.org/10.1080/08989621.2012.650948 Roig, M. (2015). Avoiding plagiarism, self-plagiarism and other questionable writing practices: A guide to ethical writing practices. The Office of Research Integrity.	
Assignment	Please write a short paragraph about your planned research required you to do to prevent misconduct in each step of your research project. You can use this question to start thinking about it: ○ How do I plan to ensure adherence to good scientific practice throughout my PhD project? (max. 200 words)	
Peer integrity dialogue	Before your group meeting, search the Retraction Watch Database for entries from your field of study. Scroll through the findings and think about the following questions: ○ What are the most common cases of misconduct reported from my field of study? ○ How were the cases discovered and who reported them? During your peer group meeting, take some time to compare the different cases you found: ○ Are there any differences and similarities between different fields of study? ○ Thinking about your own fields of study, what are possible traps that you wish to avoid?	

Week 4: Data and reference management

Learning objectives	• Knowing the standards for research documentation and reference management • Knowing about relevant guidelines, infrastructure and support systems at Leuphana • Knowing about approaches to and tools for reference management
Topics	• Research data management – what is it and why is it important? • Standards and criteria • Ownership and rights regarding research data, including possible conflicts • Storage of data • Data protection and privacy • Research data management at Leuphana
Reading	Academic integrity at Macalester College. (2025, November 1). *All guides: Academic integrity: Working with data: overview*. https://libguides.macalester.edu/ai_workingwithdata
Assignment	Please take some time and write a short paragraph reflecting on the relevance of data management and documentation of the research process for your PhD project (approx. 200 words). You can use the following questions as prompts: ○ What have you learned during this unit that you plan to implement during your research? ○ Where do you expect potential difficulties in data and reference management in your research and how do you plan to tackle them?
Peer integrity dialogue	During your next self-organized peer group meeting, we ask you to share recommendations on data and reference management. We all have our preferred tools, but it is sometimes helpful to learn what other tools there are, or which assets existing tools have that we may not yet have discovered. ○ Which tools do you use for managing your references, for organizing your notes and so on? And why? ○ Which ones have you tried out in the past that did not work and why? ○ What else do you find helpful for organizing your research and why?

Week 5: Publication process and authorship

Learning objectives	• Knowing the publication process and review process • Reflecting subject-specific differences in authorship standards • Awareness of standards, roles and disciplinary differences in the publication process • Developing individual strategies for handling problems such as publication pressure or authorship disputes	
Topics	Part I • Introduction to publishing process and authorship • Science communication: What is it and why is it important? • Publications as currency • Publication ethics at Leuphana • Subject-specific differences in publishing	Part II • Role of publishers • Questionable practices by publishers • How to avoid dubious publishers • Open access publishing: an alternative • Authorship: Tasks and responsibilities • Peer review and responsibility of reviewers • Problem areas of the peer reviewing process
Reading	Oliver, S. K., Fergus, C. E., Skaff, N. K., Wagner, T., Tan, P. N., Cheruvelil, K. S., & Soranno, P. A. (2018). Strategies for effective collaborative manuscript development in interdisciplinary science teams. *Ecosphere*, 9(4), e02206.	
Assignment	Read the case study Should I be listed as an author? (The office of research integrity). Please write a short reflection on your final report and help senior professor Dev in his situation (approx. 200 words). Answer the following question: What should he do? Justify your recommendation by referring to and citing ethical guidelines and material from the course.	
Peer integrity dialogue	Prepare for the self-organized group meeting by reviewing the following question: “In 2050, imagine waking up to a world where academic publishing culture has undergone transformative changes. What would this new publishing landscape look like, and what necessary shifts in attitudes, practices and infrastructure would have occurred to create a more equitable, inclusive and impactful environment for researchers worldwide?” Understand that the purpose of this exercise is to encourage independent reflection and envision positive changes in academic publishing practices.	

Week 6: Collaborative research and conflicts of interest

Learning objectives	• Knowing the complex mix of roles and conflicts of interest • Awareness of conflicts of interest • Reflective attitude towards competition and collaboration • Being able to use measures for disclosure • Getting to know and reflecting on one's own interests and wishes about an academic career in relation to a scientific career
Topics	• Definition and types of collaborative research (disciplinary, multidisciplinary, interdisciplinary, transdisciplinary) • Benefits and challenges of research collaborations • Geopolitical influences on scientific partnerships (example: EU/Germany-China) • Success factors for research collaborations • Conflicts of interest: definition and types • Strategies for managing conflicts of interests
Reading	Wuchty, S., Jones, B. F., & Uzzi, B. (2007). The increasing dominance of teams in production of knowledge. Science (New York, N.Y.), 316(5827), 1036–1039. https://doi.org/10.1126/science.1136099 van den Besselaar, P., Hemlin, S., & van der Weijden, I. (2012). Collaboration and Competition in Research. Higher Education Policy, 25(3), 263–266. https://doi.org/10.1057/hep.2012
Assignment	Reflect on the advantages and disadvantages that arise from the existence of both principles in your field of research: What is the common professional habit in your area of research? How do you want to deal with these principles in your field of work in the future? (approx. 200 words)
Peer integrity dialogue	Consider sharing one experiences or observations related to conflicts of interest you may have encountered or anticipate encountering in your field of research. Identify conflicts of interest: Engage in a dialogue within your group to identify potential conflicts of interest that may arise when balancing your PhD research and your specific career aspirations. Reflect on how pursuing a career outside and/or inside academia may intersect with your academic endeavors, such as research collaborations, or funding sources.

Week 7: Research with humans and AI (work in progress)

Learning objectives	• Awareness of research on humans and research with AI • Understanding of compliance with responsibilities • Ability to mitigate ethical challenges in research on humans and with AI	
Topics	Part I • Introduction to the “Work Free” case study • Stakeholder interests and responsibilities in human research • Key terminology for research with humans (human subject, intervention, interaction) • Ethical challenges in research with humans • European ethical guidelines for human research • Mitigation strategies for ethical challenges • Application of ethical principles to the “Work Free” project • Lessons learned and best practices	Part II • Integration of AI tools in research workflows • Ethical challenges and integrity concerns with AI use • Potential impact on learning and research competencies • Problematic research incentives in the age of AI • Guidelines from ALLEA and academic journals on AI transparency • European Commission's 6 recommendations for responsible AI use
Reading	Nordtug, M., & Haldar, M. (2023). Ethics Beyond the Checklist: Fruitful Dilemmas Before, During, and After Data Collection. Qualitative Inquiry, 10778004231176088. Bouhouita-Guermech, S., Gogognon, P., & Bélisle-Pipon, J. C. (2023). Specific challenges posed by artificial intelligence in research ethics. Frontiers in artificial intelligence, 6.	
Assignment	In the following assignment you are evaluating a research proposal applying for ethical approval at Leuphana University. Please, make yourself familiar with the following project description: Project case description (Sundermann, 2025) of the project *called AI-Supported Analysis of Social Integration Among German and US Refugees*. Put yourself in the shoes of the principal investigator of this study and apply for ethical approval at Leuphana with the ethical review board. Make yourself familiar with your institution’s ethics application form with all the information that you gathered about the project. LINK to the INSTITUTIONS ETHICS APPROVAL WEBSITE Answer the following questions in a short reflection essay (approx. 200 words) for your final report: 1) How do you perceive the process of applying for ethical approval at your institution? 2) Would this study get approval by the ethical review board: Why or why not? Please explain the reasons for your answer based on your institution’s code of conduct.	

Peer integrity dialogue	The interactive video from the US office of research integrity is an engaging and relatively light introduction into different roles in a research project with human participants. (1) Watch the intro of the research clinic: Link to the interactive video The Research Clinic (2) Pick one of the roles Jan Klein, Megan Boyle, Mary Rosenberg or Richard Sowers. (3) If you are more than four people, make sure that each role in your group is assigned at least once. If possible, do not assign roles twice. (4) Play the interactive game individually. (5) Discuss your experiences, decisions and your experiences regarding the different interests of the roles within the case.

Week 8: Mentoring and supervision

Learning objectives	• Knowing about the role and duties of a supervisor • Being aware of potential conflicts and their solutions in the supervisor-supervisee relationship • Learning about what to include in your supervision agreement • Reflecting on your role as a future supervisor of junior candidates
Topics	• Introduction to supervision • Role of a supervisor and PhD candidates' experience with supervisors • Guidelines for PhD supervision • Steps of the supervision process • Supervision throughout the doctoral phase: Role of the supervisor • PhD candidates' experience with supervisors • Conflicts and how to address them • Training and mentoring programs
Reading	Qualitätszirkel Promotion (QZP). (2019). *Shaping a doctorate together. Guidelines for doctoral candidates*. Qualitätszirkel Promotion (QZP).
Assignment	Think about what your expectations of your supervisor are and what you will do to shape your role in this relationship in a paragraph of up to 500 words. Reflect on the aspects of integrity and ethical research: In how far is the supervisor/doctoral candidate relationship important for good scientific practice? You can first think about this on your own and then reflect on it with your group before writing the paragraph (see also the group reflection prompts). If you have not already done so, we suggest drafting your supervision agreement as a basis for discussion with your supervisor. If you have already finalized your supervision agreement, reflect on whether it might need revisions (if yes, which ones and why), or whether you find it works well for the time being (if yes, why?).
Peer integrity dialogue	Prior to meeting with your group, think about your experiences with mentors, teachers and supervisors in the past. ○ What were good practices you experienced? ○ What were negative experiences you have had in the past in your relationships with teachers or supervisors? ○ What are your expectations from your doctoral supervisor? ○ What are values and practices you will implement in your own (future) practice as supervisor? During your group meeting ○ Share your experiences. ○ Present the core elements of your supervision agreement (if you have not yet discussed this with your supervisor, you can use your peer group for feedback and inspiration).

Week 9: Conflict resolutions

Learning objectives	• Knowing ways of dealing with conflicts and misbehavior • Identifying, addressing and documenting observed rule violations • Ability to analyze and resolve conflicts with others • Ability to deal constructively with given rules and rule violations
Topics	• Introduction to conflict resolution • Prevention and early resolution • Ombudspersons • Report mechanisms and strategies for suspected scientific misconduct • Whistleblower protection • Solutions and sanctions
Reading	Yong, E., Ledford, H., & van Noorden, R. (2013). Research ethics: 3 ways to blow the whistle. *Nature*, *503*(7477), 454–457. https://doi.org/10.1038/503454a
Assignment	Choose one of the following questions and write a short reflection (approx. 200 words): 1. From the perspective of institutions: How can institutions and funding agencies foster a culture that, on the one hand, ensures that whistleblowers are valued and protected and, on the other hand, ensures that the concerns raised are treated fairly and objectively? 2. From the perspective of whistleblowers: What measures and support systems should be in place to protect whistleblowers in the scientific community, ensuring they are shielded from retaliation and can continue their work without fear of reprisals?
Peer integrity dialogue	Your task is to collaboratively create a *Research Resilience Toolkit* for your group to help handle difficult situations in your academic journeys. Before your meeting reach out to reach out to mentors, faculty and experienced postdocs for their valuable insights on handling professional disputes and challenging situations in academic research. In your meeting, engage in meaningful discussions within your group to share the advice and recommendations you've gathered. Reflect on your personal experiences and challenges and discuss how the shared insights resonate with your own academic journey. Emphasize practicality: Ensure that the advice is actionable and applicable to real-world situations.

Week 10: Diversity and inclusion in research

Learning objectives	• Understanding power and power relations in the academic system • Understanding intersectionality • Reflecting privileges and unconscious biases • Developing an appreciative attitude toward diversity in the academic work culture • Knowing and exploring inclusive practices in everyday academic work
Topics	• Knowledge and definition of power and privilege, discrimination and intersectionality • Academic privileges based on the Academic Wheel of Power • Examination of figures and data on admission requirements, discrimination in the German academic system, recognition of achievements • Reflection on and concretization of anti-bias and diversity-sensitive everyday practices in research
Reading	Stie, A., Thib, N., & Ul, A. (2025). Can Germany rein in its academic bullying problem?. Nature, 641, 545. 10.1038/d41586-025-01207-8
Assignment	This task aims at engaging you to critically reflect on the importance of diversity and how biases impact the ethical dimensions of research. Through this reflection and the material provided in the workshop, you will examine both the theoretical and practical implications of diversity in fostering ethical research practices (approx. 300 words). Choose one of the following topics and reflect on the related questions from the perspective of your research field: 1.The Role of Diversity in Research Ethics o Why is diversity important for ethical research practices in your subject area? o How can the inclusion of diverse perspectives (whether cultural, social, disciplinary, or methodological) improve the ethical integrity and quality of research outcomes in your field of research? Consider how diversity impacts theory development, research design, or societal applications of research in your field of research? 2.Strategies for Ethical Improvement in Your field of research? o Propose strategies for addressing bias and promoting diversity in research practices within your discipline. For example, how can legal scholars ensure fairness in interpretations? How can engineers or natural scientists minimize bias in technological development or data interpretation?

Part B: Lecturer check-ins

The six lecturer check-ins (LCIs) provide structured opportunities for active engagement, collaborative learning and application of research integrity principles. Each session is designed as a 210 to 240-minute interactive on campus or online workshops.

Useful Advice

Before each of the online sessions:

Technical preparation:

- Test all collaboration tools yourself before the session
- Prepare backup plan if technology fails (e.g., use chat if collaboration tool is not working)
- Have links ready to paste in chat quickly (e.g., create a document with all the links; have taps open)
- Consider pre-assigning breakout rooms rather than auto-assigning for better control
- Copy the instructions for activities to online tools if possible
- Setting the right tone (online-specific considerations):
    - Acknowledge that discussing challenges online can feel vulnerable
    - Emphasize that breakout rooms are private spaces (only facilitator can enter)
    - Confidential space: Explain confidentiality clearly and that the shared experiences stay within the group
    - Mention that individual video is encouraged but optional for comfort
    - Create explicit permission: “This is a judgment-free space to share honest observations”

LCI 1: Exploring the *good* in good scientific practice

Week	**1**			
Content	In this introductory session of the course, you will get to know each other and form peer success groups for networking and collaboration. We will discuss the meaning of *good* in good scientific practice and gain initial insights into the key norms and values of research integrity. This session sets the foundation for understanding ethical research conduct.			
Learning objectives	• Understanding and discussing the fundamentals of scientific integrity • Building a peer network - Participants get to know each other and form peer success groups for networking and collaboration.			
Session timeline	**Time in minutes**	**Activity**	**Description**	**Material**
	10	Heatmapping	Activity 1.1: Level of knowledge and relevance query	Heatmap
	15	Welcome & introduction	Introduction of the facilitator & understanding of the lecturer's role	Slide with self-presentation
	30	Structure & course organization	Introducing the structure, purpose and organization of the course, explaining the conditions for finishing the course	Slides with the course structure and conditions
	10	Break		
	45	Communities of practice	Activity 1.2: Building initial groups for the peer integrity dialogue	Sundermann, A. (2025). LCI 1: Handout peer integrity dialogue. The good scientist: A blended-learning course on research integrity.
	10	Break		
	80	Exploring the *good* in the good scientific practice	Activity 1.3: Collection and discussion of important expectations, values and No-go's of good scientific practice	Slide with the instructions; Colored moderation cards in three colors (e.g., green for expectations, blue for values/norms, red for No-go's); Markers for all participants; Three meta plan walls with the three categories

				Pins or adhesive materials to display cards; Timer
	10	**Closing**		

Detailed activity descriptions LC1

Activity 1.1: Heatmapping (10 min)

Purpose: Anonymous and analogue survey on the perceived relevance and knowledge of all units of the course. This heatmapping exercise is helpful to get to know the perceived expertise level in the group and for comparing changes in important learning outcomes between the start and the finish of the group. Engage the participants in an activity before the course starts. The activity is designed to be activating.

Material: Brown paper, adhesive dots in two colors (red = perceived relevance, green = perceived expertise)

Room setup: brown paper fixed on a meta plan wall

Procedure:

1. Create a two times ten scales from 0 to five. Each time a scale pair for each of the units of the course. We left Unit 2 Integrity through the research process out of this exercise since it is more detailed description of the relevance of different measures for good scientific practice through the research process.
2. Place the brown paper in the middle of the classroom on the floor and ask the candidates to rate their perceived level of expertise and relevance by two adhesive dots. Place two bowls with the adhesive dots next to the brown paper. You can use the following instructions:
3. Leave the room while the participants put their ratings.
4. Discuss the ratings with the participants. Ask them for their interpretation and for specific purposes of extreme ratings.

Activity 1.2: Community of practice (⏱ 45 min)

Purpose: Formation of intentionally heterogeneous peer dialogue groups to foster ongoing peer-to-peer exchange throughout the course. These groups are deliberately composed of participants from diverse disciplinary backgrounds to create learning communities where candidates encounter different perspectives, engage with controversial opinions, and become aware of alternative viewpoints on integrity dilemmas. We facilitate the initial group building during the course and provide weekly thematic prompts aligned with each course unit to guide discussions. This structure creates a safe space for continuous dialogue where participants explore how integrity challenges manifest differently across fields—from laboratory practices in natural sciences to authorship questions in humanities to data handling in social sciences. Deliberate diversity enables candidates to recognize that ethical dilemmas are context-dependent and multifaceted, supporting skill development through perspective-taking, community building through respectful disagreement and the establishment of an ethical foundation that values pluralism and critical reflection.

Materials: Sundermann, A. (2025). *LCI 1: Handout peer integrity dialogue. The good scientist: A blended-learning course on research integrity*.

Procedure:

Preparation

- Collect information about participants' disciplinary backgrounds through registration or pre-course survey
- Prepare random assignment of the course participants to equally distributed groups that ensures disciplinary diversity within those groups
- Create group size of 4-5 participants per group
- Create slides with organizational information and tasks for the groups

Main activity phase (20-25 minutes total)

Phase 1: Introduce the concept of the peer integrity dialogue (5 minutes)

Present the rationale for peer dialogue groups, emphasizing for example:

- **Building an ethical foundation**: Creating supportive learning communities
- **Community building**: Developing connections across disciplines
- **Skill development**: Practicing reflection and perspective-taking through dialogue
- **Purpose**: Ongoing peer-to-peer exchange on course content and integrity dilemmas
- **Intentional heterogeneity**: Groups deliberately mix disciplines to expose participants to diverse perspectives and controversial viewpoints

- Weekly thematic prompts on Moodle will be provided aligned with course units

Phase 2: Explain the random assignment (2 minutes)

- Emphasize the rationale for random assignment:
- **Equal opportunity**: Everyone has the same chance to work with different colleagues
- **Fresh perspectives**: Avoid comfort zones and pre-existing relationships
- **Real-world preparation**: Professional collaborations are often not self-selected
- **Building broader networks**: Connect with people outside usual circles
- Clarify that groups are formed by you to ensure disciplinary diversity

Phase 3: Introduce trial period and support structure (3 minutes)

Explain the flexibility mechanism:

- **Three-week trial period**: Groups have time to establish dynamics and working patterns
- **Scheduled evaluation**: After three weeks, groups assess whether the composition works
- **Open communication channel**: Provide your email or a feedback form for concerns
- **Adjustments if necessary**: Groups can request changes if significant issues arise
- **Focus on learning**: Emphasize that the priority is building reflection skills, not achieving perfect group composition
- Reassure participants that some initial awkwardness is normal and part of the learning process

Phase 4: Group organization time (20 minutes)

Provide groups with structured time to organize themselves. Display or provide a slide with these tasks:

Organizational tasks for the peer groups:

- Exchange contact details and discuss preferred communication channels (email, messaging apps, etc.)
- Discuss meeting frequency: How often would you like to meet? (Suggestion: weekly or bi-weekly)
- Decide on meeting mode: Online, in-person, or hybrid?

- Discuss how you would like to organize your reflection rounds:
    - Will you rotate facilitation?
    - How will you use the weekly prompts?
    - What format works best for the participants of the group structured discussion or informal conversation?
- Set your first meeting date and time

Facilitation advice:

- Circulate among groups during organization time to answer questions and observe dynamics
- Be prepared with solutions for groups with uneven numbers (e.g., one group of 6 if needed)
- Have a backup plan for absent participants (add them to a group later or form a new group if several are absent)
- If you are not using Moodle to provide the course content, consider providing a digital platform (forum, shared document) where all groups can access their weekly prompts
- Frame the heterogeneity and random assignment positively: this is a unique opportunity they might also be confronted with in their usual academic environments

Activity 1.3: Exploring the good in good scientific practice (⏱ 80 min)

Reference: Sponholz (2019), p. 32-34

Purpose: Small group discussion and collective mapping of expectations, values/norms and ethical boundaries in academic research using colored moderation cards displayed on meta plan walls. This foundational exercise surfaces participants' existing understanding of research integrity across disciplines, creates a shared reference framework for the course and makes both common ground and diversity of perspectives visible. Activates participants immediately as co-creators of the course's ethical discourse rather than passive recipients. The activity is designed to be collaborative and discussion-based, building community while establishing baseline knowledge that can be revisited throughout the course to track evolving understanding of research integrity dilemmas.

Material: Slide with the instructions; colored moderation cards in three colors (e.g., green for expectations, blue for values/norms, red for No-go's); markers for all participants; three meta plan walls with the three categories Pins or adhesive materials to display cards; timer.

Room setup: Arrange space to accommodate small group discussions (same peer dialogue groups from previous activity or new groups of 4-5). Ensure meta plan walls are visible and accessible to all participants, preferably in the middle of the room. Have sufficient working space for groups to spread out.

Procedure:

Step 1: Introduction and instructions (5 minutes)

Present the activity structure on a slide or hand-out

Instructions for participants:

- Discuss the following questions in your group (40 minutes)
- Record **1-3 key aspects per question** on the colored cards
    - Green cards: Expectations
    - Blue cards: Values/Norms
    - Red cards: No-Go's
- Write clearly in bullet points
- **Important**: Keep it concise and avoid lengthy explanations (No-Go's = No long texts!)

Three discussion questions:

1. What do you **expect to learn** in the course *The good scientist*?
2. What are the **most important values and norms** in academic research?
3. What are ethical **no-go's** in academic research?

Clarify that:

- Each group should aim for one to three cards per question (not per person)
- Cards should capture the group's prioritized points, not everything discussed
- Emphasis is on key aspects that the group finds most significant
- Different disciplinary perspectives should be acknowledged in the discussion

Step 2: Small group discussion (40 minutes)

- Groups work independently on all three questions
- Facilitator circulates among groups to:
    - Observe engagement and dynamics
    - Answer clarifying questions

- Ensure groups are recording their key points
- Encourage groups to consider disciplinary differences
- Remind groups of time at 20-minute and 30-minute marks

Step 3: Collaborative card posting (20 minutes)

This streamlined approach saves time and immediately makes patterns visible:

Procedure:

- Select one group to start (or invite volunteers)
- First group posts ALL their cards on the three meta plan walls
- Facilitator briefly reads aloud or summarizes what has been posted

Then, group by group:

- Next group comes forward with their cards
- They add ONLY cards with points that are NOT YET on the walls
- If their point is already represented, they acknowledge it and set that card aside
- This continues with each subsequent group

Facilitator role during posting:

- Help groups identify if their point is truly new or like existing cards
- Encourage placement near related ideas to begin clustering
- Ask clarifying questions if a card's distinction from existing ones is unclear
- Note aloud when multiple groups had the same idea (validates consensus)
- Highlight when a unique perspective emerges
- **Watch for subject specific tensions**: When similar terms appear with different nuances (e.g., *objectivity* from natural sciences vs. social sciences), place these cards near each other and flag them for discussion

Step 4: Plenary discussion and synthesis (15 minutes)

Guide a structured discussion through each category:

For expectations (4-5 minutes):

- Highlight main themes that emerged
- Note which expectations were shared across many groups
- Acknowledge how these will inform the course design

- Flag any values or expectations that may need clarification or adjustment

Synthesis (2-3 minutes):

- Connect the three categories: How do expectations, values and boundaries relate?
- **Emphasize productive disagreement**: “We’ve already seen that concepts like objectivity, transparency, or even what counts as data can mean different things across disciplines. This diversity is valuable and it will help us all think more critically about integrity in our own fields.”
- Preview how these themes will be explored throughout the course
- Acknowledge both the strong consensus and valuable diversity visible in responses

LCI 2: Focus on scientific misconduct

Week	**2**			
Content	In Session 2 of this course, we will focus on types of scientific misconduct. You should prepare by reviewing the materials from Unit 1: Introduction to good scientific practice, Unit 2: Scientific misconduct and Unit 3: Research integrity throughout the research process. We will apply knowledge from these units to analyze real-world cases.			
Learning objectives	• Differentiating between various types of scientific misconduct, including fabrication, falsification and plagiarism (FFP), as well as questionable research practices (QRPs) and explaining how these manifest differently across disciplinary contexts. • Applying research integrity principles to analyze real-world cases and scientific dilemmas, evaluating the ethical dimensions and potential consequences of misconduct at different stages of the research process. • Assessing grey areas and contextual factors that distinguish misconduct from honest error or legitimate methodological differences, recognizing how disciplinary norms influence these judgments. • Articulating the systemic and individual factors that contribute to scientific misconduct and identifying preventive strategies that can be implemented throughout the research lifecycle.			
Session timeline	**Time in minutes**	**Activity**	**Description**	**Material**
	10	Introduction	Short feedback on the last session per Zoom survey; request for open questions	Digital survey
	20	Recap peer integrity dialogue	Follow up to see if the groups have been successfully formed If there are exchange requests or swap offers, assist in ensuring that people can swap or new groups can be formed	
	5	Break		
	60	Connecting values to practice	Activity 2.1: Group discusses research values, linking them to specific no-go's and practices.	Online whiteboard with spaces for each group and selected values on each space
	15	Break		
	40	Forms of misconduct: What kind of misconduct is this?	Activity 2.2: Group discusses different integrity dilemmas and must find the correct misconduct description.	Number of dilemmas that describe different and distinct forms of misconduct.
	30	Break		
	50	Detecting and	Activity 2.3: Solve a real-world case of three-time plagiarism	• Original article:

		responding to plagiarism		https://onlinelibrary.wiley.com/doi/10.1002/eet.1901 • Two papers containing plagiarism: Number 1; Number 2 • Blog article: Coenen et al. (2022) The Journal of Cleaner Productions tolerates plagiarism • Plagiarism detection checklist/guidelines
	10	**Closing**		

Detailed activity descriptions LC2

Activity 2.1: Connecting integrity values to practice (⏱ 60 min)

Purpose: Group activity deepening understanding of research values by connecting them to ethical No-go's and good scientific practices. This collaborative exercise builds on previous sessions, helping participants articulate value definitions and identify their practical implications in academic research. Through peer discussion and knowledge exchange, participants develop a shared understanding of how abstract values translate into concrete research norms and prohibited behaviors, fostering critical reflection on research integrity.

Material: ALLEA (2023) The European code of conduct for research integrity; online whiteboard; break-out sessions set up; slide with the instructions and instructions on the online whiteboard; documentation of LCI1 Activity 1.3: Exploring the good in good scientific practice (⏱ 80 min).

Room setup: Participants are divided into small groups and assigned to separate breakout rooms. Each group works simultaneously on a shared digital whiteboard, with dedicated sections pre-assigned per group. Different values from the ALLEA Code of Conduct (Honesty, Accountability, Good Stewardship, Fairness and Professional Courtesy, Reliability, Respect) are distributed across groups. Each group discusses their assigned value, defines it, identifies

related No-go's and good scientific practices, then documents their findings in their whiteboard section before reconvening in the plenary after 50 minutes.

Procedure:

Preparation:

- Create a shared digital whiteboard with separate sections for each breakout group
- Assign one or all ALLEA guideline values (Honesty, Accountability, Good Stewardship, Fairness and Professional Courtesy, Reliability, or Respect) to one group or to all groups
- Prepare breakout rooms corresponding to the number of groups

During the Session:

1. Introduction (4 min): Briefly explain the activity objectives and the connection to previous sessions on research values.
2. Group assignment (1 min): Assign participants to breakout rooms and direct them to their designated whiteboard section.
3. Breakout session (30 min):
    - Participants enter their assigned breakout rooms
    - Groups distribute their assigned value among members
    - Each member presents their definition of the value
    - Group discusses and identifies related No-go's and good scientific practices
    - Group documents findings in their whiteboard section (green digital sticky notes for expectations; blue digital sticky notes for good practices and measures, red digital sticky notes for related No-go's)

Figure 3. Representation of LCI2 Activity 2.1: Connecting integrity values to practice (60 min).

4. Return to plenary: After 30 minutes, close breakout rooms and reconvene all participants.
5. Debrief (25 min):
    - Have each group briefly present three main discussion points and/or questions
        - Follow-up question:
        - Identify an example where different scientific disciplines might arrive at different ethical conclusions.
            1. Which values or norms might be competing in these conflicts?
            2. How could a compromise look like?

Activity 2.2: Which kind of misconduct is this? (40 min)

Purpose: This case-based discussion activity engages participants in analyzing real-world ethical dilemmas in academic research. By working through concrete scenarios in small groups, participants apply their theoretical understanding of misconduct forms to practical

situations. The activity develops critical thinking and ethical reasoning skills as participants identify misconduct, propose solutions, justify their decisions and connect cases to formal integrity frameworks (Leuphana integrity guidelines). Through peer discussion and subsequent plenary sharing, participants learn to navigate the complexity and ambiguity inherent in ethical decision-making, building confidence in recognizing and addressing research integrity challenges in their own work.

Material: Online whiteboard with a reasonable number of dilemmas for group work; A good inspiration for dilemmas is the Dilemma Game App: https://www.eur.nl/en/about-university/policy-and-regulations/integrity/research-integrity/dilemma-game; slide with instructions; institutions integrity guidelines

Room setup: Participants are divided into small groups of four to six participants and assigned to separate breakout rooms. Each breakout room is pre-configured with a link containing an assigned integrity dilemma case. Groups work simultaneously but independently on their respective cases for 20 minutes.

Procedure:

Preparation:

- Select or develop ethical dilemma cases relevant to academic research
- Create separate online whiteboard links for each case scenario
- Set up breakout rooms corresponding to the number of cases/groups
- Ensure each breakout room has access to its designated online whiteboard link
- Prepare integrity guidelines as reference materials for participants

During the session:

1. **Introduction (3 min):**
    - Explain the activity's purpose and connection to research integrity
    - Clarify the task: analyze case, identify misconduct, propose solution, justify decision and identify applicable guidelines
    - Emphasize that groups should be prepared to share insights in plenary
2. **Group assignment (2 min):**
    - Assign participants to breakout rooms
    - Ensure each group knows how to access their online whiteboard link
3. **Breakout session (20 min):**
    - Participants enter designated breakout rooms

- Groups open their online whiteboard link and read the assigned ethical dilemma
- Groups discuss and work through the three tasks:
    1. Provide solutions and identify misconduct
    2. Justify their decision in writing
    3. Identify applicable Leuphana integrity guidelines (expert level)

- Monitor breakout rooms periodically to ensure groups are on track

4. **Return to plenary (automatic):** After 20 minutes, breakout rooms close and participants reconvene.
5. **Sharing and reflection (15 min):**
    - Select 2-3 representative groups to briefly present (2-3 min each)
    - Ask remaining groups to share one key insight or challenge via chat
    - Facilitate brief discussion on common themes or divergent approaches
    - Provide concise summary of key learning points

Follow-up:

- Save whiteboard documentation for participant reference
- Consider sharing aggregated insights or common themes identified

Activity 2.3: Real world case: Detecting and responding to plagiarism

Purpose: This case-based discussion activity engages participants in analyzing real-world plagiarism that occurred at their own university. By working through this concrete case in small groups, participants apply their theoretical understanding of plagiarism and misconduct to a practical situation involving a former PhD candidate whose work was plagiarized. The activity develops critical thinking and ethical reasoning skills as participants systematically identify different forms of plagiarism, propose appropriate response strategies, justify their decisions based on severity and evidence, and connect the case to formal integrity frameworks (Leuphana integrity guidelines and institutional reporting procedures). Through peer discussion in breakout groups and subsequent plenary sharing, participants learn to navigate the complexity and ambiguity inherent in plagiarism detection and institutional responses, building confidence in recognizing and addressing research integrity challenges in their own work.

Material: Coenen et al. (2021) (Original); Coenen and Newig (2022) (Blog post with context information); Battamo et al. (2021) (Plagiarism case 1); Battamo et al. (2022) (Corrigendum);

Sun et al. (2023) (Plagiarism case 2); slides with activity instructions; collaborative platform for group findings; Timer visible to all participants

Room Setup: Main session room for plenary discussions; breakout rooms (5 participants per room); Screen sharing capability enabled for all participants; Chat function for questions and sharing links; Collaborative whiteboard tool for collective notetaking

Procedure

Preparation:

- Assign participants to breakout rooms in advance (heterogeneous groups by subject if possible)
- Prepare and test all links

Phase 1: Introduction and context (10 minutes)

- Welcome participants and introduce the session topic and present the learning objectives. Emphasize that this is a real case from Leuphana university involving a former PhD candidate
- Frame the activity: “Today you will work as integrity investigators to identify the plagiarism and consider how to respond”

Phase 2: Guided analysis in breakout groups (25 minutes)

- Distribute participants to pre-assigned breakout rooms
- Share all materials via chat
- Explain the task clearly before sending groups out
- Each group receives the following instructions:
  - Group Activity Instructions:

    For Groups 1-3 (Paper 1 - Introduction):

    Open the Introduction section of both the original article and Paper 1 side-by-side. Read through carefully, sentence by sentence. Identify the plagiarized sentence(s) - look for verbatim copying or minimal paraphrasing-. Look for exact wording matches; sentence structure similarities; missing or inadequate citations; context: How central is this content to the original work? Prepare to present (2 minutes): Prepare to share the specific plagiarized sentence(s) you found and explain why it constitutes plagiarism.

    For Groups 4-6 (Paper 2 - Title and Concepts):

    Compare the titles of the original article and Paper 2. Document the similarities and differences. Consider: Is the title substantially copied? Are key terms replicated? Examine how central concepts from the original title are used in Paper 2’s content. Discuss: At what point does similarity in titles cross the line into misconduct? Rate the severity of this form of plagiarism. Prepare to present (2 minutes): the title comparison and your assessment of whether/why this is

plagiarism. Be ready to share your recommended response strategy (1 minute presentation)

For Groups 7-8 (Institutional Response):

Read the blog post carefully. Identify what actions were taken by the affected researcher. Document the journal's responses (or lack thereof). Prepare presentation (2 minutes): Summarize the institutional response timeline and key issues. Be ready to share your recommended response strategy (1 minute presentation)

Phase 3: Plenary discussion and synthesis (13 minutes)

- Invite each group 1 to 3 and 4 to 6 spokespersons to share findings
- Use collaborative whiteboard to compile findings
- Facilitate comparison discussion:
    - How do these two types of plagiarism compare in severity?
    - Is plagiarizing a title different from plagiarizing a sentence? Why or why not?
    - What makes each case clear-cut or ambiguous?
    - What evidence is most compelling in each case?
- Discussion on institutional response
- Groups 7-8 present findings from blog post
- Facilitate discussion:
    - Why might a journal fail to act on plagiarism?
    - What rights do authors have?
    - What are the power dynamics at play?
    - What support systems exist at our university?

Phase 4: Practical takeaways (2 minutes)

- Summarize main learning points and point out strategies to protect academic work:
    - Maintain dated drafts and correspondence
    - Use pre-print servers to establish precedence
    - Build networks in your field who can support claims
    - Understand your university’s research integrity office procedures
    - Open floor for remaining questions

LCI 3: Focus on authorship and publishing

Week	3			
Content	In Session 3 of this course, we will address integrity issues in authorship and the publishing process. Participants should prepare by reviewing Unit 4 on Data and reference management, Unit 5 on authorship and the publishing process, and Unit 6 on Integrity issues in collaborative research. This active learning session includes working on real-world authorship challenges and performing role play. This session includes a moderated discussion with two guests from the university media service			
Learning objectives	- Recognize the ethical issues and integrity violations embedded in pressure-driven academic practices (e.g., authorship manipulation, salami slicing, predatory publishing) - Analyze how systemic and individual pressures (publish-or-perish culture) can compromise research integrity - Develop alternative, integrity-focused strategies for navigating career advancement while maintaining ethical standards - Apply processes for determining authorship that include joint discussion and agreement among all collaborators - Navigate authorship discussions within adviser-advisee and mentorship relationships, understanding advisers' dual role as mentors and potential co-authors - Demonstrate strategies for addressing changes in responsibilities and authorship over the course of a project			
Session timeline	**Time in minutes**	**Activity**	**Description**	**Material**
	15	Welcome	Introduction of the objectives, warm-up activity and feedback survey	Warm-up activity, feedback activity
	60	"Just between us" – Career Advice from Prof Dr Dr Sam K. Publishalot	Activity 3.1 Participants identify and critique problematic academic career advice and collaboratively develop alternatives	Online whiteboard with *bad* career advice regarding authorship and publishing from different subject degrees; Sundermann, A. (2025). *LCI 3: Career advice from Prof Dr Dr Publishalot. The good scientist: A blended-learning course on research integrity*.
	15	Break		
	90	Authorship dispute: A role play	Activity 3.2: Interactive role-play exploring authorship determination processes, focusing on early establishment of authorship criteria, transparent discussion of contributions and fair	Role play material: Lui & Gunsalus (2009a) Authorship RCR role plays. https://doi.org/10.18130/7n5z-w082

			credit allocation in collaborative research projects.	
	30	Break		
	50	Data Drama and Publishing Payments: A moderated discussion	Moderated expert panel introducing university services supporting research integrity: open access publishing and data/reference management tools, facilitating adoption of good scientific practices.	Two guests from your university services, e.g. open access support, data and reference management; prepared moderation questions for the facilitation of the
	10	Closing		

Detailed activity descriptions LC3

Activity 3.1: "Just between us" – Career Advice from Prof Dr Dr Sam K. Publishalot (⏱ 60 min)

Purpose: This interactive activity develops participants' critical awareness of problematic publication strategies and unethical career advice that circulate in academia. Through the humorous yet revealing lens of the fictional Professor Sam K. Publishalot, participants learn to identify advice that prioritizes quantity over integrity, recognize the ethical issues embedded in common academic practices and collaboratively develop alternative, integrity-focused strategies. The activity creates a safe space to discuss pressures doctoral candidates face and empowers them to navigate their careers ethically despite systemic pressures to publish or perish.

Material: Narrative scenario text introducing Professor. Publishalot (department kitchen scene); Sundermann, A. (2025). *LCI 3: Career advice from Prof Dr Dr Publishalot. The good scientist: A blended-learning course on research integrity*.; Online whiteboard for collaborative work; Access to breakout rooms; Reference to research integrity guidelines (optional)

Room setup: Participants are divided into small groups (4-6 people) and assigned to separate breakout rooms. Each group is given access to the shared online whiteboard where they can view all advice statements and post their alternative recommendations in the designated section #ThingsPublishalotWontTell.

Procedure:

Introduction (5 min)

- Present the narrative scenario: See opening scenario

- Explain the activity's purpose: identifying problematic advice and developing ethical alternatives
- Emphasize the importance of recognizing systemic pressures while maintaining integrity

Step 1: Breakout discussions (20-25 min)

- Participants move to assigned breakout rooms in small groups
- Each group receives 1-2 specific pieces of Professor Publishalot's advice to analyze
- Groups work through three tasks:
    1. **Discuss the advice:** What makes it problematic? What's the underlying message?
    2. **Identify ethical issues:** What integrity principles are violated? What are potential consequences?
    3. **Draft alternatives:** Create one integrity-focused piece of advice that addresses the same career concern but maintains ethical standards
- Groups post their alternative advice in the online whiteboard section #ThingsPublishalotWontTell with brief justification

Step 3: Plenary sharing and synthesis (10-15 min)

- Return to main room
- Facilitator highlights key themes from the online posts
- Select 2-3 groups to briefly share their alternative advice (2 min each)
- Facilitate discussion:
    - What patterns emerge in problematic advice?
    - How can we support each other in resisting these pressures?
    - What institutional changes would help?
    - Where can participants turn when facing these dilemmas?

Closing (5 min)

- Summarize key takeaways: recognizing red flags, having language to discuss problems, building peer support
- Remind participants they can revisit the Padlet for the collective wisdom generated
- Provide resources for ethical guidance and support systems at the institution

Instructions for participants:

Opening scenario: *Picture this: It's late Friday afternoon in the department kitchen. The coffee machine gurgles its last drops. Prof. Dr. Dr. Sam K. Publishalot, a senior academic with an impressively long email signature and a CV thicker than most PhD theses, corners a group of wide-eyed PhD candidates. Looking around conspiratorially, he leans in and says, "Let me tell you how things REALLY work in academia..." What follows is his collection of "precious career advice" - gathered over decades of successfully navigating the academic jungle...*

- **Your task:**
    1. **Step 1: Breakout discussions (Group work)**
        - In your breakout groups, discuss the advice assigned to your group:
        - **Talk about the advice:** What makes it problematic? What's really being said here?
        - **Identify the ethical issues at stake:** Which integrity principles are violated? What could go wrong?
        - **Draft one alternative, integrity-focused piece of advice** that addresses the same career concern but maintains ethical standards. Post it in the Padlet section **#ThingsPublishalotWontTell**
    2. **Step 2: Share back**
        - Return to plenary
        - Be prepared to share your group's insights and alternative advice

LCI 4: Focus on AI, supervision and conflict resolution

Week	**6**			
Content	In Session 4 of the course, we will focus on integrity issues related to mentoring and supervision, as well as institutional support for conflict resolution. You will work on supervision agreements and the supervisor-relationship dynamic. Please prepare by reviewing Unit 7 Research on humans and with AI, Unit 8 on mentoring and supervision as well as UNIT 9 on conflict resolution.			
Session timeline	Time in minutes	Activity	Description	Material
	15	Welcome & Warm-up	Introduction of the learning objectives of the session,	feedback survey last session, warm-up activity
	60	Research and AI: A deep dive	Input on AI regulations at your institution & update to Unit 7 Activity 4.1	Latest information and recommendations for doctoral candidates on the use of AI in research; Survey on how the participants are using AI in their research
	15	Break		
	60	The anti-supervision challenge	Activity 4.2: Reflect on key expectations and conditions of the supervisor- mentee relationship	
	15	Break		
	60	Moderated discussion on institutional services & conflict resolution		Moderation questions; Two guests: e.g., ombudspersons, doctoral candidates' counsellors
	10	Closing		

Detailed Activity Descriptions LC4

Activity 4.1: Making sense of AI: A data-driven discussion (30 min)

Purpose: To gain insight into current AI usage patterns among doctoral candidates and facilitate peer exchange on practical experiences, opportunities and challenges when using AI tools in research.

Material: Online survey tool (e.g., particify) accessible via link or QR code; survey questions e.g.,: Preiß et al. (2023) ChatGPT and me

Procedure:

Introduction (10 minutes)

- Brief overview of the activity's purpose and structure. Share survey link/QR code.
- Survey completion (5 minutes)
- Participants anonymously respond to questions about their use of GenAI
    - Which research tasks do you use AI for (literature search, writing, data analysis, coding, etc.)?
    - Which specific tools do you use?
    - How often do you use these tools for those tasks?

Results presentation (10 minutes)

- Display aggregated survey results on screen, highlighting key patterns and trends.
- Guided discussion (7 minutes)
- Facilitate conversation using prompts such as:
    - Which tools have you found most/least helpful and why?
    - What surprising benefits or limitations have you encountered?
    - What concerns or ethical considerations come up for you?
- Encourage 2-3 participants to briefly share specific experiences.

Wrap-up (5 minutes)

Summarize and discuss key takeaways and opportunities for further exploration.

Activity 4.2: The anti-supervision challenge (⏱ 60 min)

Purpose: This provocative reverse-thinking exercise helps doctoral candidates identify critical supervision pitfalls from their perspective, encouraging honest reflection on their experiences and concerns. By framing the discussion around failure rather than success, participants feel more comfortable sharing challenging supervisory experiences they've observed or encountered. The activity surfaces common problematic supervision practices, validates shared struggles and creates a foundation for discussing how candidates can advocate for better supervision and navigate difficult supervisory relationships.

Material: Links to all collaborative tools shared in chat before breakout sessions begin; the discussion prompt posted in chat and/or on shared screen: “What are the three worst things that you can do as a supervisor if you want to make sure that your PhD candidates will fail?”; Collaborative online workspace for each group; Timer visible to facilitator Main shared space for consolidating results (shared screen or collaborative board).

Procedure:

Introduction (5 minutes)

- Assign participants to breakout rooms (4-6 people per room works well)
- Demonstrate how to use the chosen collaboration tool and share the link to the shared online space (brief 1-minute demo)
- Display the discussion prompt on screen and on the online whiteboard
- Explain the reverse-thinking approach and emphasize psychological safety
- Clarify that groups will brainstorm failures, then select their top 3
- Tech check: Ask participants to confirm they can access the whiteboard before entering breakout rooms

Phase 1: Brainstorm and discussion in breakout rooms (30 minutes)

- Open breakout rooms
- Groups generate ideas about worst supervision practices in their shared document/board
- Participants add ideas individually and through discussion
- Encourage participants to draw from their own experiences, observations of peers, or concerns

    Facilitator actions during this phase:

    - Visit each breakout room briefly (2-3 minutes each) to check engagement
    - Monitor shared documents to see progress
    - Use broadcast message at 10 minutes and 5 minutes remaining
    - Be available for technical support

Phase 2: Selection and documentation in breakout rooms (5 minutes)

- Broadcast message to all rooms explaining Phase 2
- Groups review all suggestions generated
- Through discussion and consensus, select the top three “worst things”
- Clearly mark or highlight these three items in their shared space
- One person prepares to share screen or present to the entire group

    Facilitator actions:

    - Send 5-minute and 2-minute warnings via broadcast
    - Check shared documents to ensure groups are progressing
    - Prepare to bring everyone back to main room

Phase 3: Report (15 minutes)

- Close breakout rooms and return everyone to main session
- Each group shares their top three (1-2 minutes per group)
- Verbal summary: Spokesperson reads out the top three while facilitator types into main shared document

- Pre-prepared: Groups copy their top three into a main consolidation document during Phase 2
- Note repeated themes across groups in real-time

Facilitator wrap-up (5 minutes)

- Identify patterns and common themes using highlighting or grouping
- Discuss which *worst things* appeared across multiple groups
- Validate shared experiences: “You're not alone in experiencing or observing these challenges”
- Use polling or chat to gather quick reactions: “Which of these have you experienced or observed?”
- Bridge to constructive strategies: “What can you do when you encounter these situations?”

LCI 5: Focus on diversity and inclusion in academic research culture

Week	9		
Content	In Session 5 of the course, we will address the crucial issues of diversity and inclusiveness in research culture. Diversity and inclusion are fundamental to good scientific practice, as they foster a collaborative environment that enhances the quality and impact of research, in line with the DFG code of conduct. Understanding these cross-sectional topics is vital for upholding ethical standards and promoting integrity in research practices. Please prepare for this session by reviewing Unit 10 on diversity and inclusion in academic research. This session is an example. All rights reserved by FEIN Consulting.		
Learning objectives	• Understanding how institutional power operates in academic settings and research culture • Identifying forms of discrimination, privilege and intersectionality in academia • Analyzing how a lack of diversity and exclusion impair the quality of knowledge production to understand the connection between diversity and the epistemic quality of scientific innovation. • Reflecting critically on one's own positionality and role in fostering inclusive research culture • Developing concrete, actionable strategies to promote equity within individual research practice		
Session timeline	Topic Activity	Description	Material
	Introduction	Introducing the participants and the external facilitators Explaining special engagement norms for this session	
	Warm-up	Using a warm-up activity to introduce institutional power as a concept	Warm-up activity
	Input phase	Introducing the concepts of discrimination and privileges in academia, intersectionality	e.g., academic wheel of power
	Numbers & facts discussion	Discussing facts about biases and intersectional discrimination in academia, accessibility and recognition in academia	
	Inclusion action brainstorm	Individual brainstorming: concrete equity actions across PhD research phases.	Online whiteboard with the phases of research
	Closing	-	

LCI 6: Ethics in action

Week	**10**			
Content	In the final in-person session of this course, you will apply their learning outcomes and knowledge in a classroom debate on a real-world case scenario. This session will also include an evaluation segment. Join us on campus for the finale of our course! In this session, you will have the opportunity to apply all learnings of this course to different scenarios and reflect on your learning outcomes.			
Learning objectives	• Consolidating and recalling core concepts of good scientific • Analysing the connection between theoretical knowledge and practical applicability in real research situations • Critically and realistically reflecting on one's own level of learning and transfer • Developing an awareness of one's own confidence in action and remaining development needs • Spontaneously applying learned ethical principles in simulated practical situations			
Session timeline	**Time in minutes**	**Activity**	**Description**	**Material**
	15	Introduction & heatmapping	Activity 6.1: Introducing the agenda, the learning objectives & the heatmapping activity	Brown paper with heatmapping activity, adhesive points in two colors
	15	Assessment clarification	Clarifying questions regarding the performance assessment	
	120	Ethics in action	Activity 6.2: Interactive role-plays exploring mentoring, whistle blowing and data management, conflict of interest and research with human subjects to review the knowledge and measures to test the doctoral candidates' level of knowledge, the options for action they have learned and their degree of confidence in applying them in these real-world situations	Four role plays and their instruction (Loui & Gunsalus, 2009b, 2009c, 2009d, 2009e) , role play posters with problem identification, violated value and solutions to document the outcomes of the role plays; Role-play instructions and poster Reflection sheet (A4, pre-structured) Flipchart for plenary session collection
	110	Qualitative feedback session	Externally moderated session for feedback on the course	e.g., Leuphana SHIFT!-evaluation
	10	Closing		

Detailed activity descriptions LC6

Activity 6.1: Retrospective heatmapping (10 min)

Purpose: Anonymous and analogue retrospective survey on the perceived relevance and knowledge of all units of the course. This heatmapping exercise is helpful to get to know knowledge level after the course in the group and for comparing changes in important learning outcomes between the start and the finish of the course. The activity is designed to be engaging and activating.

Material: Brown paper, adhesive dots in two colors (red = relevance, green = perceived expertise)

Room setup: brown paper fixed on a meta plan wall

Procedure:

1. Create a two times ten scales from 0 to five. Each time a scale pair for each of the units of the course. We left Unit 2 Integrity through the research process out of this exercise since it is more detailed description of the relevance of different measures for good scientific practice through the research process.
2. Place the brown paper in the middle of the classroom on the floor and ask the candidates to rate their perceived level of expertise and relevance by two adhesive dots. Place two bowls with the adhesive dots next to the brown paper. You can use the following instructions:
3. Leave the room while the participants put their ratings.
4. Discuss the ratings with the participants. Ask them for their interpretation and for specific purposes of extreme ratings. Here are some suggestions for reflective questions:
    - How satisfied are you with the course? Why?
    - Which units are most helpful for your PhD journey? Which topics are the least helpful ones? Why?
    - How did you perceive active learning sessions? Which kind of activities did you find most helpful for your doctoral research?

Activity 6.2: Research ethics in action (120 Min.)

Purpose: Application and testing of consolidated knowledge from all course units in realistic dilemma scenarios. This role-play exercise enables participants to diagnose their own transfer

success by actively applying learned ethical principles and action strategies under realistic conditions. The activity helps participants identify the gap between theoretical knowledge and practical implementation, evaluate their confidence in handling ethical conflicts and recognize areas for further development.

Material: Four role-play scenarios with instructions (Loui & Gunsalus, 2009b, 2009c, 2009d, 2009e); role-play posters displaying problem identification; violated values and solutions, reflexion sheets (A4, pre-structured with three sections)

Room setup: As many separate areas in the room for parallel role-play sessions as participants; chairs arranged in circles or semi-circles at each station; one flipchart or whiteboard visible for all participants for the final plenary phase.

Phase 1: Role plays (60 Minutes)

- Four role plays and their instruction (Loui & Gunsalus, 2009b, 2009c, 2009d, 2009e), role play posters with problem identification, violated value and solutions

Phase 2: Silent self-assessment (15 min.)

- Participants receive a one-page reflection sheet with, for example, three sections:
  - "What knowledge was I able to recall with confidence?" / "Where did I have gaps in my knowledge?"
  - "How confident did I feel when taking action?" (scale 1-5)
  - "What was my biggest "aha" moment?"

Phase 3: Peer exchange in small groups (30 min.)

• Participants form groups of four (ideally mixed from different role-plays). They reflect on and discuss the following key questions:

- In which situation was the transfer from knowledge to action most difficult?
- What helped/hindered you in applying what you learned?
- Where do you see your greatest need for development?

Phase 4: Plenary flashlight (15 min.)

• Moderated collection in plenary session with the following key questions:

- What surprising moments were there regarding your own level of knowledge?
- What was the most common challenge during the transfer?

• Visualization of the main findings on a flipchart/whiteboard

6. Performance assessment and notes on assessment

Assessment overview

The two-part assessment structure of this course concept promotes sustained engagement and meaningful application of course content to participants' research contexts.

Part 1 comprises ten weekly post-course assignments that prompt participants to consolidate key learning points after each session. These regular, low-stakes tasks maintain momentum throughout the course and provide formative feedback opportunities while building toward the final assessment.

Part 2 requires a written reflective report where participants critically analyze connections between course content and their own research field and dissertation work. Participants articulate concrete strategies for implementing course concepts, methodologies, or frameworks into their research practice. This assessment design balances continuous participation with deeper synthesis, ensuring participants don't just absorb content passively but actively integrate new knowledge into their scholarly work. The combination supports both immediate learning and long-term transfer, making the course investment directly relevant to participants' ongoing research development.

Assessment weighting

This course uses a **two-part assessment structure** with the following weighting:

- **Part 1: Weekly post-course assignments** = 60%
- **Part 2: Written reflective report** = 40%

Total course assessment: Pass/Fail

Pass requirement: Minimum 300 credits (60% of total)

Important considerations:

- Participants must complete **both parts** of the assessment to be eligible for a passing grade
- Strong performance in one part can compensate for weaker performance in the other, if the 300-credit threshold is met overall

Total available credits: 500 credits

Table 3. Overview of credit distribution.

Assessment Component	Individual credits	Total credits	Percentage
Part 1: Weekly assignments (10 assignments)	30 credits each	300 credits	60%
Part 2: Reflective report	10 to 70 credits	200 credits	40%
Total		**500 credits**	**100%**

Part 1: Weekly post-course assignments

Assignment Structure - Participants complete ten weekly assignments based on prompts detailed in Units 1-10 (pages 17-33). Each prompt is designed to consolidate learning from the corresponding session and encourage immediate application to real-world academic situations or transfer to participants' research contexts.

Alternatives: The ten assignments are also suitable for use as a portfolio assessment. Doctoral candidates can choose 5-6 answers and submit them for assessment, explaining why they have chosen these answers. It is also recommended that the assignments be completed on an ongoing basis and that feedback be provided as the work progresses.

Administration Prompts should be introduced at the end of each Units, preferably directly in an online tool. Assignments are recommended due before the following session to maintain continuity and immediate transfer.

Part 2: Reflective report

Assessment description

The reflective report is the culminating assessment of the course, requiring participants to synthesize their learning across all ten units and articulate how their understanding of good scientific practice has evolved and will shape their future research.

Format: Written essay
Length: Maximum 3 pages
Formatting requirements: Arial, 11 pt font, 1.15 line spacing
Individual work
Weighting: 40%

Complete task prompt:

Congratulations! You are finishing the first course of the doctoral courses at Leuphana! In this final reflective essay for the course The Good Scientist, you are asked to reflect on your learning journey over the past ten weeks through UNITS, peer group meetings and lecturer check-ins.

This reflective essay should not exceed three pages, adhering to formatting guidelines (Arial, 11 pt font, 1.15 line spacing). The purpose of this essay is to encourage you to thoughtfully contemplate your experiences and insights gained throughout the course, particularly in the context of research ethics regarding your individual research project.

Please refer to the following two reflective questions within your essay:

1. *What does good scientific practice mean to you in your field of research, and how has your understanding evolved during the course?*
2. *Reflecting on your growth as a researcher in the past ten weeks, what key takeaways or insights will you carry forward in your academic and professional journey?*

This essay provides an opportunity for you to synthesize your learning, consider real-world applications of research ethics and articulate your commitment to good scientific practice. It encourages self-reflection and the development of a deeper understanding of research ethics principles, promoting responsible research practices in your academic and professional pursuits.

Facilitator instructions:

Timing: Introduce the reflective report at the beginning of the course so participants understand where their learning is headed. Remember them periodically (especially at mid-point) to consider how course content connects to these questions. Formally assign it during Unit 9 or 10 with submission due 2-3 weeks after the final session.

Evaluation criteria

The reflective report is evaluated using a comprehensive rubric assessing depth of reflection, synthesis across course elements, discipline-specific application, evidence of growth and—critically—future-oriented application of measures for good scientific practice).

Assessment rubrics

Assessment criteria for part 1: Ten weekly assignments

Unit	Individual post course assignment	Criterion A (10 credits)	Criterion B (10 credits)	Criterion C (10 credits)
1	What is the relationship between the core values presented in Unit 1's material and the standards and measures presented in the DFG Code of Conduct for Safeguarding Good Research Practice?	**Correct identification of core values and norms** The participant accurately identifies and represents the fundamental values (such as honesty, reliability, transparency, respect, accountability) and norms (such as documentation requirements, authorship rules, conflict of interest disclosure) explicitly presented the course material. The visual includes the key elements without significant omissions or misrepresentations.	**Effective visual representation showing intersections and relationships** The participant creates a clear, coherent infographic or visual representation that goes beyond listing values and norms. The visual demonstrates how these elements intersect, overlap, or relate to one another (e.g., how transparency as a value connects to multiple norms like data sharing, methodology reporting and peer review). The format chosen (diagram, concept map, flowchart, etc.) is appropriate and enhances understanding of these relationships.	**Evidence of personal reflection and understanding** The visual representation reflects the participant's interpretation and understanding of the material, not merely copying text from the guidelines. This could be shown through the chosen organizational structure, explanatory labels, examples, or annotations that reveal how the participant conceptualizes the connections between values and norms. The work demonstrates thoughtful engagement with the reflective question.

Unit	Individual post course assignment	Criterion A (10 credits)	Criterion B (10 credits)	Criterion C (10 credits)
2	For each of the steps of your individual doctoral project, outline where the biggest pitfalls lie in terms of good scientific practice (bullet points in a table will suffice).	**Coverage of the research lifecycle** The participant systematically and structurally identifies the essential steps of their own doctoral project (e.g., literature research, method development, data collection, data analysis, interpretation, publication). The presentation is comprehensible and covers the entire research process, not just individual isolated aspects.	**Subject-specific and project-related concretization** The identified pitfalls are specifically tailored to the participant's research project, not just general and generic risks. The participants have understood the challenges of their subject area and methodology (e.g., specific problems with qualitative interviews, big data analyses, laboratory experiments, historical sources, etc.)	**Depth of reflection** Not only are obvious pitfalls (such as plagiarism or data falsification) identified, but the examples also demonstrate an awareness of more complex, subtle ethical challenges (e.g. *gray areas* such as HARKing, questionable research practices, implicit bias in data interpretation due to the subjective position of the researcher, structural constraints due to publication pressure, power relations in authorship).

Unit	Individual post course assignment	Criterion A (10 credits)	Criterion B (10 credits)	Criterion C (10 credits)
3	How do I plan to ensure adherence to good scientific practice throughout my PhD project?	**Direct connection to own project steps and identified challenges** The participant explicitly links their preventive measures to the specific project steps and pitfalls they identified in assignment 2. The paragraph demonstrates coherent thinking across assignments rather than generic statements. It's clear which preventive actions address previously identified challenges in their specific research context.	**Concrete and actionable preventive measures** The participant describes specific, practical actions they will take to prevent misconduct (e.g., "I will pre-register my hypotheses before data collection", "I will maintain a detailed lab notebook with dated entries", "I will establish authorship agreements at a project start"). The measures are actionable and feasible, not vague intentions like "I will be careful" or "I will follow guidelines".	**Comprehensive coverage across the research lifecycle.** The preventive measures address multiple phases of the research process (planning, data collection, analysis, publication), not just one or two stages. The participant shows awareness that misconduct prevention requires ongoing attention throughout the entire PhD project, demonstrating a holistic understanding of research integrity as a continuous practice.

Unit	Individual post course assignment	Criterion A (10 credits)	Criterion B (10 credits)	Criterion C (10 credits)
4	What have you learned during this unit that you plan to implement during your research?	**Critical reasoning about relevance and importance** The participant provides reasonable arguments for why data management and documentation are (or are not) important for their specific research. If they believe certain aspects are less relevant, they explain why with valid disciplinary or methodological justifications. They demonstrate understanding that documentation is essential for all dissertations, even when "classical data management" may be less applicable. The reasoning is thoughtful, not dismissive.	**Specificity to own research context** The reflection is clearly tailored to the participant's PhD project, field and methodology. They discuss specific types of data/materials they work with (e.g., archival sources, philosophical arguments, lab samples, interview recordings, simulations) and specific reference types relevant to their discipline. The response shows they've thought about their situation, not generic research in general.	**Concrete challenges and strategies** The participant names at least one concrete, identifiable challenge they anticipate in managing data, documentation, or references in their project AND describes a specific, practical approach to address it. Tracking challenge and the solution are tangible and actionable (e.g., "tracking multiple manuscript versions across co-authors – will use shared cloud folder with version numbers" not "will be organized".

Unit	Individual post course assignment	Criterion A (10 credits)	Criterion B (10 credits)	Criterion C (10 credits)
5	Please write a short reflection for your final report and help senior professor Dev in his situation. What should he do? Justify your recommendation by referring to and citing ethical guidelines and material from the course.	**Clear, justified recommendation with ethical reasoning** The participant provides a specific recommendation for what Dev should do (e.g., "Dev should speak directly with Kay", "Dev should recuse himself from the tenure committee", "Dev should contact the journal editor"). The recommendation is justified with ethical reasoning that addresses the authorship problem, potential conflicts of interest and fairness considerations. The response shows understanding of the ethical dimensions beyond just procedural steps.	**Accurate application of authorship criteria and guidelines** The participant correctly applies authorship standards (such as ICMJE criteria, CRediT taxonomy, or DFG guidelines) to analyze whether Dev qualifies as a co-author. They demonstrate understanding that providing tools or casual advice typically does not warrant authorship, and they distinguish between substantial intellectual contribution and courtesy/gift authorship. The analysis is accurate, not based on misconceptions.	**Use of specific citations from course materials and guidelines** The participant explicitly references and cites relevant ethical guidelines, frameworks, or course materials to support their argument (e.g., "According to the DFG code of conduct..." or "The CRediT taxonomy shows that..."). Citations are specific and appropriate, demonstrating engagement with the course content. Generic statements without reference to learned material do not fulfill this criterion.

Unit	Individual post course assignment	Criterion A (10 credits)	Criterion B (10 credits)	Criterion C (10 credits)
6	Reflect on how pursuing a career outside and/or inside academia may intersect with your academic endeavors, such as research collaborations, or funding sources.	**Subject-specific analysis and transfer to own project** The participant provides concrete examples of how collaboration and competition manifest specifically in their field and research project (e.g., "In neuroscience, labs compete for scarce brain imaging time but collaborate on standardizing protocols" or "In philosophy, scholars compete for limited journal space but collaborate in joint projects"). The reflection is grounded in the actual practices and culture of their discipline, not abstract or generic statements about research in general.	**Depth and breadth** The participant demonstrates nuanced thinking by discussing both positive and negative aspects of collaboration AND competition. They explore multiple dimensions (e.g., knowledge advancement, career development, resource allocation, quality control, innovation, equity issues, mental health). The reflection shows depth (going beyond surface-level observations) and breadth (covering various aspects rather than fixating on one point).	**Critical personal positioning for future practice** The participant critically reflects on how they personally want to navigate collaboration and competition in their career, showing awareness of tensions, trade-offs, or ethical dilemmas. This goes beyond describing "what is" to thoughtfully considering "what should be" and articulating their own values and intended approach (e.g., "While competition drives me, I will prioritize open data sharing..." or "I recognize the pressure to compete but will..."). The reflection is self-aware and shows genuine engagement with professional identity formation.

Unit	Individual post course assignment	Criterion A (10 credits)	Criterion B (10 credits)	Criterion C (10 credits)
7	1) How do you perceive the process of applying for ethical approval at Leuphana? 2) Would this study get approval by the ethical review board: Why or why not? Please explain the reasons for you answer based on the Leuphana ethical guidelines and the course material.	**Critical reasoning about ethical approval with reference to guidelines** The participant provides a clear, reasoned judgment about whether the study would receive approval, explicitly referencing Leuphana ethical guidelines and/or course material to support their analysis. They demonstrate understanding that the project in its current state would not be approved and explain why using specific ethical principles from the course (e.g., informed consent standards, data protection requirements, vulnerability considerations, risk-benefit assessment)	**Identification of specific missing elements and ethical concerns** The participant identifies concrete, specific issues with the project that would prevent approval (e.g., "lacks detailed informed consent procedure for vulnerable refugee population", "no adequate data protection plan for sensitive AI-analyzed data", "insufficient risk mitigation for algorithmic bias", "missing anonymization strategy", "unclear cross-border data transfer protocols"). They demonstrate close engagement with both the case details and the application requirements.	**Depth and breadth of reflection using course concepts** The participant's reflection demonstrates depth (nuanced, substantive thinking beyond surface level) and breadth (addressing multiple dimensions: procedural requirements, substantive ethical issues, researcher responsibilities, participant protection, institutional safeguards). They connect their analysis to concepts, frameworks, or principles discussed in the unit, showing integration of learning rather than purely opinion.

Unit	Individual post course assignment	Criterion A (10 credits)	Criterion B (10 credits)	Criterion C (10 credits)
8	Reflect on the aspects of integrity and ethical research: In how far the supervisor/doctoral candidate relationship is important for good scientific practice?	**Clear articulation of mutual expectations and active role-shaping** The participant clearly describes both what they expect from their supervisor and what they will actively contribute to the supervisory relationship. They show awareness that this is a two-way relationship requiring effort from both parties. The expectations are specific (e.g., "monthly meetings with prepared agendas", "feedback within 2 weeks on drafts", "I will communicate challenges early").	**Connection between supervisory relationships and research integrity** The participant demonstrates understanding of how the supervisor-doctoral relationship directly impacts good scientific practice. They reference specific integrity aspects from course material (e.g., authorship decisions, data management standards, ethical research conduct, prevention of misconduct, power dynamics, accountability structures). The connection is explicit and shows critical thinking about why this relationship matters beyond just completing the PhD.	**Reflective engagement with supervision agreement** The participant meaningfully engages with their supervision agreement (existing or planned): they either identify specific needed revisions with justification or explain why the current agreement works well with concrete examples, or outline what they will include in a planned agreement and why these elements matter for integrity. The reflection shows they've thought critically about how formal agreements support ethical research practice, not just administrative compliance.

Unit	Individual post course assignment	Criterion A (10 credits)	Criterion B (10 credits)	Criterion C (10 credits)
9	A) **From the perspective of institutions**: How can institutions and funding agencies foster a culture that, on the one hand, ensures that whistleblowers are valued and protected and, on the other hand, ensures that the concerns raised are treated fairly and objectively? B) **From the perspective of whistleblowers:** What measures and support systems should be in place to protect whistleblowers in the scientific community, ensuring they are shielded from retaliation and can continue their work without fear of reprisals?	**Direct engagement with the chosen question and perspective** The participant clearly addresses the specific question they chose (either institutional or whistleblower perspective) and stays focused on that perspective throughout their reflection. They demonstrate understanding of the challenges relevant to their chosen angle (e.g., if institutional: balancing protection with fair investigation and preventing misuse; if whistleblower: addressing retaliation risks and career consequences). The response directly answers the question posed.	**Concrete, practical measures with reference to course material** The participant proposes specific, actionable measures or systems and connects them to concepts, frameworks, policies, or examples from the unit (e.g., "As discussed in the unit, anonymous reporting channels like...", "The EU Whistleblower Directive requires...", "The case of [example from course] shows the need for..."). They demonstrate engagement with course content through explicit references, not only personal opinions.	**Critical reflection addressing both aspects of the dual challenge** The participant shows nuanced thinking by addressing BOTH parts of the question's inherent tension: For question 1: valuing/protecting whistleblowers AND ensuring fair/objective treatment of concerns. For question 2: protecting from retaliation AND enabling continued work. They acknowledge complexities, potential conflicts, or implementation challenges, demonstrating depth of reflection rather than one-sided or simplistic thinking.

Unit	Individual post course assignment	Criterion A (10 credits)	Criterion B (10 credits)	Criterion C (10 credits)
10	Why is diversity important for ethical research practices in your subject area?	**Subject-specific analysis and concrete examples** The participant grounds their reflection in their specific research field with concrete examples that demonstrate genuine understanding of how diversity and/or bias operate in their subject area. They discuss theories, methods, research designs, or applications relevant to their field (e.g., "In educational research, sampling bias may exclude non-traditional learners..." or "In AI development, training data often underrepresents..."). The analysis is specific and contextual, not generic statements applicable to any field.	**Comprehensive engagement with chosen topic's questions** The participant addresses all aspects/questions within their chosen topic thoroughly. For example, if choosing Topic 1, they discuss why diversity matters AND how it improves ethical integrity AND how it impacts their specific research context. The reflection demonstrates breadth by covering the multiple dimensions posed in the prompt, not just focusing narrowly on one sub-question while ignoring others.	**Critical depth with reference to course material** The participant demonstrates critical, nuanced thinking that goes beyond surface-level observations, showing awareness of complexities, tensions, or systemic issues. They connect their reflection to concepts, frameworks, or examples from the unit (e.g., referencing specific types of bias discussed, diversity frameworks presented, or case studies examined). The reflection shows integration of learning and deeper analysis rather than purely descriptive or opinion-based responses.

Assessment criteria for part 2: Reflective report.

Criterion	Credits	Focus
Addresses both reflective questions substantively	10	Both questions receive adequate attention and depth
Demonstrates evolution of thinking	20	Clear evidence of how understanding has changed from beginning to end of course
Discipline-specific and project-specific contextualization	30	Grounds reflection in participant's specific field and research project; Vague statements like "I learned about research ethics" score lower than specific examples tied to their research context
Integration across course content	30	Synthesizes learning from multiple units, shows connections between themes
Depth and quality of critical reflection	40	Shows thoughtful analysis, engages with complexity, demonstrates intellectual honesty; explores a few themes deeply will score higher than those who superficially mention many topics
Future-oriented application of concrete measures for good scientific practice	70	Articulates specific, actionable steps participant will take; includes concrete measures, timelines, or commitments; avoids vague intentions like “I will try to be more ethical”
Total	200	

7. Overview of the available teaching materials

Video lectures:

Sundermann, A. (2025). *Unit 1* | *Introduction to research integrity* [mp4]. Leuphana Universität Lüneburg. https://doi.org/10.48548/pubdata-2367
Grauer, C. (2025). *Unit 2* | *Research integrity during the research process* [mp4]. Leuphana University Lüneburg. https://doi.org/10.48548/pubdata-2367
Grauer, C. (2025). *Unit 3* | *Plagiarism* [mp4]. Leuphana Universität Lüneburg. https://doi.org/10.48548/pubdata-2367
Grauer, C. (2025). *Unit 3* | *Scientific misconduct* [mp4]. Leuphana Universität Lüneburg. https://doi.org/10.48548/pubdata-2367
Grauer, C. (2025). *Unit 4* | *Data and reference management* [mp4]. Leuphana Universität Lüneburg. https://doi.org/10.48548/pubdata-2367
Sundermann, A. (2025*). Unit 5* | *Authorship* [mp4]. Leuphana Universität Lüneburg. https://doi.org/10.48548/pubdata-2367
Sundermann, A. (2025). *Unit 5* | *Publishing process* [mp4]. Leuphana Universität Lüneburg. https://doi.org/10.48548/pubdata-2367
Sundermann, A. (2025). *Unit 6* | *Collaborative research and conflicts of interest* [mp4]. Leuphana Universität Lüneburg. https://doi.org/10.48548/pubdata-2367
Sundermann, A. (2025). Unit 7 | *Research with AI* [mp4]. Leuphana Universität Lüneburg. https://doi.org/10.48548/pubdata-2367
Sundermann, A. (2025). *Unit 7* | *Research with humans* [mp4]. Leuphana Universität Lüneburg. https://doi.org/10.48548/pubdata-2367
Grauer, C. (2025). *Unit 8* | *Mentoring* [mp4]. Leuphana Universität Lüneburg. https://doi.org/10.48548/pubdata-2367
Sundermann, A. (2025). Unit 9 | *Conflict resolution* [mp4]. Leuphana Universität Lüneburg.

Other material:

Sundermann, A. (2025). *Unit 7 Case study: AI-Supported Analysis of Social Integration Among Refugees*. The good scientist: A blended-learning course on research integrity. Leuphana University Lüneburg. https://doi.org/10.48548/pubdata-2367
Sundermann, A. (2025). *LCI 1: Hand-out peer integrity dialogue.* The good scientist: A blended-learning course on research integrity. Leuphana University Lüneburg. https://doi.org/10.48548/pubdata-2367
Sundermann, A. (2025). *LCI 3: Career advice from Prof Dr Dr Publishalot.* The good scientist: A blended-learning course on research integrity. Leuphana Universität Lüneburg. https://doi.org/10.48548/pubdata-2367
Sundermann, A. (2025). *Workbook. The good scientist: A blended-learning course on research integrity.* Leuphana Universität Lüneburg. https://doi.org/10.48548/pubdata-2367

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References

ALLEA. (2023). *The European code of conduct for research integrity – Revised edition 2023.* DOI 10.26356/ECOC

Battamo, A. Y., Varis, O., Sun, P., Yang, Y., Oba, B. T., & Zhao, L. (2021). Mapping socio-ecological resilience along the seven economic corridors of the Belt and Road Initiative. *Journal of Cleaner Production*, *309*, 127341. https://doi.org/10.1016/j.jclepro.2021.127341

Battamo, A. Y., Varis, O., Sun, P., Yang, Y., Oba, B. T., & Zhao, L. (2022). Corrigendum to “Mapping socio-ecological resilience along the seven economic corridors of the Belt and Road Initiative” [J. Clean. Prod. 309 (2021) 127341]. *Journal of Cleaner Production*, *359*, 131872. https://doi.org/10.1016/j.jclepro.2022.131872

Biggs, J. (2003). Aligning teaching for constructing learning. *Higher Education Academy*, *1*(4), 1–4.

Blake, N., & Masschelein, J. (2003). Critical theory and critical pedagogy. In N. Blake, P. Smeyers, R. Smith, & P. Standish (Eds.), *The blackwell guide to the philosophy of education* (pp. 38–56). Blackwell Publishing. https://podcast.leuphana.de/category/stud_cast_leuphana/

Coenen, J., Bager, S., Meyfroidt, P., Newig, J., & Challies, E. (2021). Environmental Governance of China's Belt and Road Initiative. *Environmental Policy and Governance*, *31*(1), 3–17. https://doi.org/10.1002/eet.1901

Coenen, J., & Newig, J. (2022). *The Journal of Cleaner Production tolerates plagiarism.* Leuphana University Lüneburg. https://sustainability-governance.net/2022/03/21/the-journal-of-cleaner-production-tolerates-plagiarism/

DFG. (2024). *Guidelines for safeguarding good research practice: Code of conduct* (revised version 1.2). Deutsche Forschungsgemeinschaft. https://zenodo.org/records/14281892 https://doi.org/10.5281/zenodo.14281892

European Commission. (2022a). *The European Competence Framework for Researchers*. https://research-and-innovation.ec.europa.eu/jobs-research/researchcomp-european-competence-framework-researchers_en#what-is-researchcomp

European Commission. (2022b). *Knowledge ecosystems in the new ERA : Using a competence-based approach for career development in academia and beyond*. *Independent expert report*. Publications Office of the European Union. https://doi.org/10.2777/150763

Ezebilo, E. E. (2012). Challenges in Postgraduate Studies: Assessments by Doctoral Students in a Swedish University. *Higher Education Studies*, *2*(4), 49–57. https://eric.ed.gov/?id=EJ1081292

Katsarov, J., Andorno, R., Krom, A., & van den Hoven, M. (2022). Effective Strategies for Research Integrity Training—A Meta-analysis. *Educational Psychology Review*, *34*(2), 935–955. https://doi.org/10.1007/s10648-021-09630-9

King, P. M., & Strohm Kitchener, K. (2001). The reflective judgment model: Twenty years of research on epistemic cognition. In B. K. Hofer & P. R. Pintrich (Eds.), *Personal Epistemology: The psychology of beliefs about knowledge and knowing* (pp. 37–61). Routledge. https://doi.org/10.4324/9781410604316-10

Laufer, M., & Gorup, M. (2019). The invisible others: Stories of international doctoral student dropout. *Higher Education*, *78*(1), 165–181. https://doi.org/10.1007/s10734-018-0337-z

Loui, M., & Gunsalus, C. K. (2009a). *Authorship (RCR Role Plays).* https://doi.org/10.18130/7n5z-w082

Loui, M., & Gunsalus, C. K. (2009b). *Conflict of Interest (RCR Role Plays).* https://doi.org/10.18130/Y43H-H832

Loui, M., & Gunsalus, C. K. (2009c). *Human Subjects (RCR Role Plays)*. https://onlineethics.org/cases/role-play-scenarios-teaching-responsible-conduct-research/human-subjects-rcr-role-plays

Loui, M., & Gunsalus, C. K. (2009d). *Peer Review (RCR Role Plays).* https://doi.org/10.18130/26XG-K450

Loui, M., & Gunsalus, C. K. (2009e). *Whistleblowing - Data Management (RCR Role Plays).* https://doi.org/10.18130/DNBS-0Y35

Mezirow, J. (2008). An overview of transformative learning. In J. Crowther & P. Sutherland (Eds.), *Lifelong learning* (pp. 40–54). Routledge. https://www.taylorfrancis.com/chapters/edit/10.4324/9780203936207-12/overview-transformative-learning-jack-mezirow?context=ubx&refId=29cded97-7143-40b2-b460-f3366027a57b

The office of research integrity. *Case three: Should I be listet as an author?* https://ori.hhs.gov/case-three-should-i-be-listed-author

Ombudsgremium – OWID. (2025, December 3). *Teaching Materials on Research Integrity*. https://ombudsgremium.de/2974/teaching-materials-for-research-integrity/?lang=en

Phelps, J. M. (2016). International doctoral students' navigations of identity and belonging in a globalizing university. *International Journal of Doctoral Studies*, *11*, 1.

Preiß, J., Bartels, M., Niemann-Lenz, J., Pawlowski, J., & Schnapp, K.-U. (2023). *"ChatGPT and me" Erste Ergebnisse der quantitativen Auswertung einer Umfrage über die Lebensrealität mit generativer KI an der Universität Hamburg*. Universität Hamburg. https://www.fdr.uni-hamburg.de/record/13403 https://doi.org/10.25592/uhhfdm.13403

Sponholz, G. (2019). *Curriculum für Lehrveranstaltungen zur guten wissenschaftlichen Praxis: Erweiterte und überarbeitete Fassung*. https://ombudsgremium.de/2693/curriculum-fuer-lehrveranstaltungen-zur-gwp/#Curriculum_fuer_Lehrveranstaltungen_zur_guten_wissenschaftlichen_Praxis_2019

Stevens-Long, J., & Barner, R. W. (2012). Doctoral study: At the intersection of age-related change and higher learning. In C. Hoare (Ed.), *The Oxford Handbook of Reciprocal Adult Development and Learning* (2nd, pp. 491–509). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199736300.013.0125

Sun, Y., Lewis, J. I., & Urpelainen, J. (2023). Environmental governance of China's Belt and Road Initiative. *Environmental Politics*, *32*(7), 1109–1116. https://doi.org/10.1080/09644016.2023.2251372

Sundermann, A. (2025). *Unit 7 Case study: AI-Supported Analysis of Social Integration Among Refugees*.

Vurgun, S., Dumpitak, C., Adams, A., Husmann, D., Kissling, C., Nickels, B., Schölzig, K., Schuchert, C., & Vasilov, V. (2019). *Kompetenzentwicklung von Nachwuchswissenschaftlerinnen und Nachwuchswissenschaftlern: Fördern und Entwickeln*. *UniWinD-Publikationen: Vol. 10.*

Wenger, E. (2000). Communities of Practice and Social Learning Systems. *Organization*, *7*(2), 225–246. https://doi.org/10.1177/135050840072002

Zierer, K. (2011). Pedagogical eclecticism. *The Journal of Educational Thought (JET) / Revue De La Pensée Éducative*, *45*(1), 3–19. http://www.jstor.org/stable/23765440