Salwén *et al.*
International Journal for Educational Integrity (2025) 21:13
https://doi.org/10.1007/s40979-025-00186-7

International Journal for Educational Integrity

RESEARCH Open Access

Teaching research integrity: a manual of good practices: an outline

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Abstract

This article addresses the critical need for effective teaching strategies in research integrity (RI), acknowledging widespread uncertainty among educators on the best approach. Building on existing literature, the authors advocate for an ethics-inclusive perspective in RI courses, emphasizing the importance of understanding the ethical dimensions of research practice beyond mere regulatory compliance. In the main article, this dimension of RI training is discussed in detail with regard to ethics. In an abstract we provide a ready-to-use manual of how to implement this in research integrity training. The structure of the article includes a discussion of the ethical foundation of RI. The Appendix introduces a practical, tested course package designed to assist educators, particularly those without specialized ethics training, in developing meaningful RI courses. This includes a detailed overview of the course content, and practical guidance for implementation, aiming to equip educators with the tools necessary to navigate the complexities of teaching research integrity. The focus is on PhD students (but nothing is suggesting that the contents of the article and the Appendix, cannot be used for teaching research integrity on other levels), with the hope that the NERQ community's shared experiences will contribute significantly to advancing RI education.

Keywords: Curriculum, Ethics, PhD-students, Practical manual, Research integrity training

Introduction and outline of article

Teaching research integrity is considered critically important, yet many instructors still need more clarification about the best approach. In part, this is due to the many terms used to talk about the substantive issues. We have opted to use the term "Research Integrity" (see Section "The Ethical Dimension". "The Ethical Dimension").[1] Regardless of the terminology used, our main thesis is that ethics is central to the content taught in these courses. In this article, we aim to explain why, and, importantly, provide a tried-and-tested practical guide for implementing ethics in research integrity teaching.

In a recent literature review, Daniel Crean, Bert Gordijn, and Alan J. Kearns ask, "Where can stakeholders in research—such as universities, research funding organisations, and individual researchers—obtain guidance on RI [research integrity] teaching?" (Crean et al. 2023). The need for clarity in designing a research integrity course has been more widely recognised (Krom, vd Hoven 2022; Mulhearn et al 2017). With this article, the scientific community NERQ (Network for Education and Research Quality) which started as a blend of the two Horizon 2020 research projects, *Path2Integrity* (Led by professor Priess-Buchheit), and *Integrity* (Led by professor Mariette van den Hoven) – aims to contribute to such hands-on guidance as one of the main aims of the NERQ community is to exchange good practices of teaching research integrity more.

We firmly believe that Research Integrity courses can (and should) include an ethics perspective to be meaningful. This article describes a tried-and-tested course package that fellow teachers can use or be inspired by when developing their courses. This aligns with our plea for ethics-inclusive research integrity courses. The article is primarily aimed at teachers who are not specialists in ethics but are responsible for such courses, often due to mandates from their departments or higher administrative levels.

In Section "Background", we describe the background for this article. There we also describe the inherently ethical dimension of research integrity and the importance of researchers understanding the ethical aspects of their practice. Otherwise responsible research practice will amount to compliance with regulations, without further considerations of ethical implications. In Section "An Outline of the Manual", we outline the content covered in the course package. In the Appendix we describe learning outcomes (as stipulated in the syllabus), details of the content to cover in the course package, literature to use and examples of assignments. This is the practical manual. The Appendix also covers some of the practicalities of implementing the course package onsite or online. It is important to emphasize that the manual should be read together with the Appendix to get the full idea of how to practically implement the ideas presented in the article. In Section "Challenges", we address the most salient challenge facing all teachers of research integrity: that the subject is inherently ethical and complex. In the final Section, "Concluding Remarks", we offer our concluding remarks. We hope this structured approach will aid educators and researchers in navigating the intricacies of teaching research integrity while fostering a deeper understanding of this vital subject. If NERQ

[1] We use 'ethics' and 'morals' and their derivatives as synonyms. Our choices between the words are mostly dictated by convenience and by the way in which they "sound" in various contexts. We will not provide an explicit definition of these terms. Instead we follow what among moral philosophers is a rather standard way of describing ethics (Tersman 2006; Timmons 2012) as crucially involving conflicts of interest relating to life and death, happiness and misery and distributions of benefits and burdens.

can share its experience to benefit this process, we would consider this a significant contribution.

It goes without saying that we cannot cover all aspects involved in research integrity teaching. We have delimited ourselves to a practical example with a proven track record; we provide a perspective on what has worked and how to meet challenges in research integrity teaching. Further, we focus on PhD students as course participants rather than undergraduate students (but nothing suggests that the article's contents and the Appendix cannot be used to inspire teaching research integrity on other levels).

Background

In this section we provide a brief background to the manual. We also consider some terminological issues and emphasise that research integrity is fundamentally about research ethical principles or virtues, necessitating instruction on these underlying fundamentals. In this article, we do not discuss the tenability of these principles themselves (for this, see, for instance, Shamoo and Resnik 2022).

The manual

This article originates from NERQ, a consortium of experts supported by the European Commission. NERQ is committed to advancing the teaching of research integrity across Europe and works with so-called Special Interest Groups (SIG Groups) that discuss topical issues on education in rroesearch quality. The central purpose of this article is to consolidate and share the knowledge and experiences amassed by the NERQ SIG group concerning the curriculum for responsible research, that is, what topics to address and in what ways when teaching research integrity. In the Appendix, there is a detailed outline of the five separate courses that make up the complete course package. The outline includes learning outcomes, literature, and assignments, among other things, but no slides or lecture notes.

The SIG group concerning the curriculum of responsible research has had several fruitful meetings discussing multifaceted issues about the content of research integrity courses. A course package developed and designed by Stockholm University has significantly inspired these discussions. The manual we describe in this article has been thoroughly developed and taught for years at Stockholm University and offers a foundation for further exploring vital issues in research integrity teaching.

In 2016 the vice-chancellor of Stockholm University tasked the Commission for Postgraduate Education (CPE) to propose systematic forms of education to ensure that each doctoral student fulfils the Swedish Higher Education Ordinance objectives concerning research integrity. These objectives are:

- Show intellectual independence and scientific integrity, as well as the ability to do research ethics assessments.
- Provide in-depth insight into science's possibilities and limitations, its role in society, and people's responsibility for how it is used.

The CPE, in turn, appointed a working group to come up with a suggestion on how to carry out this task. The working group included members from the Department of

Philosophy and the Department of Psychology, as these departments have previously given courses on research integrity. The working group held several meetings and eventually proposed a course package including five individual courses of 1.5 credits. The group's considered judgement was that the package content effectively satisfies the objectives of the higher education ordinance while still being concise enough to fit into the PhD students' individual study plans. The Board of the Human Science Academic Area approved the course package in 2017 and was first offered in the fall of 2018.

The discussions and exchanges within NERQ have been especially relevant to the challenges of teaching research integrity. One such challenge is the concern that while research integrity is fundamentally an ethical matter, it may be complex for many course participants to grasp. Additionally, many educators in this field are not moral philosophers. This leads to a possible inclination to focus on legal and methodological requirements, thus risking leaving out the ethical dimension.

The ethical dimension

The scientific community is a knowledge-seeking community that has developed a process for gathering new knowledge – generally described as 'the scientific method' (Newton-Smith 1981). This method is today associated with a wide range of general methodological rules governing the whole research process from research design to result dissemination: make use of reliable instruments; understand and evaluate errors that are due to your instruments; be careful when recording and storing data; whenever possible, make use of controlled and repeatable experiments; avoid self-deception and bias in all aspects of research; be precise when formulating hypotheses, explanations and predictions; use appropriate statistical methods in describing and analysing data (Resnik 1998 pp 51–2). The scientist who deviates from rules like these would be regarded as a poor scientist and a threat to research integrity.

Different organisations, institutions, and governmental agencies stress that education is essential to addressing this threat. Such courses go by various names. The buzzword of today is presumably "Research Integrity" (Used by, for instance, Office of Research Integrity, University of Oxford and ALLEA), but sometimes "Responsible Conduct of Research" (National Institutes of Health, University of Copenhagen) and sometimes "Research Ethics" (Norwegian University of Science and Technology, University of Liverpool) are used. There seems to be a reasonable overlap in the content covered in these courses, and what phrase to use might be a factor to consider when recruiting students. Yet, from a curriculum point of view, it is important to stress that good research practice involves more than following methodological rules and legal requirements. The infamous *Vipeholm Study* shows this.

The *Vipeholm Study*, conducted in Sweden from 1945 to 1955, investigated the relationship between sugar consumption and dental health. The study involved residents of the Vipeholm Hospital, a state institution for individuals with intellectual disabilities. Participants were given diets with varying sugar levels to observe the effects on dental caries.

This study is often used to illustrate how science that is 'successful' in terms of results, and policies based on those results, may still be deeply problematic from an ethical standpoint (Krasse 2001). The participants, who were residents of the Vipeholm mental

institution, were not able to give informed consent due to their intellectual challenges. Consent was not obtained from their guardians or families. The study exploited a vulnerable population that could not advocate for themselves and harmed the participants.

Nevertheless the study was considered scientifically valuable and to have benefitted the broader society. It demonstrated that frequent consumption of sugary foods dramatically increases the risk of developing cavities. The study helped raise awareness about the impact of diet on oral health, leading to more proactive measures in both personal dental care and public health initiatives. One practical outcome of the study was the recommendation that consuming sweets once per week is better for dental health, compared to eating a lesser total amount spread throughout the week.

The study was in harmony with strict adherence to the scientific method and its associated rules. It was impeccable from the scientific perspective of its time. Moreover, the experiments did not violate any specific regulations governing the ethical treatment of human subjects in research. The *Vipeholm study* shows, in a nutshell, why it is important to complement the legal requirements of research with independent ethical thinking.

Of course, it is of the utmost importance that scientists adhere to the methodological and legal rules pertaining to their work, and PhD students must do the same. In many cases, what methodological and legal rules dictate and what is morally demanded overlap. For instance, data fabrication is prohibited by methodological and moral rules. Still, methodological and legal rules do not settle all possible conflicts of interest that researchers might face.

We make choices throughout the day, and all choices can be evaluated from an ethical point of view. The same goes for the choices that researchers make. What research is worth undertaking, in what way, and with whom? What if unscrupulous politicians deliberately misuse the results —should the results still be published? In what journals and in what form? Does the researcher have responsibilities for how her results are (mis) used? Do researchers have a special obligation to participate in public debate, and if so, for what reason? Are researchers responsible for serving as experts in news broadcasts or as government investigators? If so, why is that the case? Methodological or legal rules do not address these ethical questions.

Research ethical principles or virtues are elaborated to address such conflicts of interest (see Section "Is Ethics Necessary?"). Many research integrity courses pay at least some attention to some such principles or virtues. But these principles or virtues are not self-standing. What content do they have, and what is their justification when it really comes down to it? To answer questions like these, conceptual and theoretical tools from philosophical ethics are needed (For more on this and related issues, see "Is Ethics Necessary?").

The course package we describe covers methodological and legal issues, but it has a firm focus on ethics. Courses in research integrity (or whatever similar names they are given) that explicitly cover the ethical dimension should continue to do so. In this article, we articulate the reasons for this stance. These are also reasons for adding this dimension to courses that lack it. This means that the materials in this article are of significance to all teachers of research integrity, even if they focus more narrowly on methodological and legal rules.

Since the start of research integrity courses, many suggestions have been made on designing such courses and what topics need to be addressed. The Office for Research Integrity in the US, where research integrity courses became mandatory in the 1990s, has suggested lists with topics (Human Subject Research, Research Misconduct, Publication/Authorship, Animal Resources, Mentorship, Data Management, Collaborative Science, Conflicts of Interest and Commitment, Peer Review) that need to be addressed in training (Office of Research Integrity 2024). Also, Mulhearn et al. (2017) suggest that, based on evaluative data from multiple courses reported in the literature, we are better positioned to determine what topics and approaches can be used for what purpose. Katsarov et al. (2022) confirmed that many research integrity courses involve an ethical dimension and found that courses that did *not* have students apply ethical guidelines tended to be most effective. This surprising result might, we believe, be explained with reference to the inherently complex nature of ethics and with reference to the fact that many teachers of research integrity are themselves not trained in ethics. (For more on this, see Section "Challenges".) To our knowledge, no studies have yet been conducted on the expertise of research integrity teachers or whether there is a strong or weak relationship between ethics expertise and research integrity education. It is to be expected that when such training becomes mandatory for more target groups within universities, the scalability of such training becomes an important issue, impacting not only the number and background of staff but also the presentation mode (online, onsite, blended) of such training. As we stated earlier, it makes sense to include ethics perspectives in research integrity courses, and we will show in the course we use as an illustration what choices we have made in this respect.

An outline of the manual

The purpose of the course package is to give the students an ability to identify and independently reflect on ethical problems relating to research. The course package aims to provide knowledge of the applicable regulations and procedures for research ethics review and provides a basis for research ethics considerations in a more general meaning. Each course is designed to correspond to one week's work, with preparation, teaching, and examinations.[2] For clarity, in what follows, we will describe the contents of the separate courses using quotations directly from the information provided in the syllabi.

The Appendix (and, in a condensed form, Table 1 therein) presents an overview of lectures, including the topics addressed and the learning outcomes. It also includes a list of the course literature and an example of an assignment/examination, including its word count.

Research ethics 1: Introduction[3]

Content

Ethical problems involve conflicts of interest. In research ethics such conflicts are usually between, on the one hand, the scientific interest in generating new knowledge, and, on

[2] For some comments on teaching methods, please see footnote 7 below and the section "Implementation" in the Appendix.

[3] The course package at Stockholm University was given this name (not "research integrity"), and to stay true to the original text we use this name although it could equally well have been called a course package in research integrity.

Table 1 Courses, learning outcomes (as stated in the syllable for the courses, Stockholm university) and topics to address

Course Name	Learning Outcomes	Topics to Address
1. Ethical Problems in Research	- Understand basic research ethical questions. - Be familiar with important principles for argumentation in ethics - Be familiar with regulations that are significant to research ethics.	- Characterisation of ethical problems as involving conflicts of interest. - Solutions to ethical problems cannot be deduced from non-ethical premises (The Is-Ought gap). Reference to principles or values is needed. - Research ethical principles and their justification - Concerning the idea that adherence to them furthers the goals of science. - Concerning the idea that research ethical principles are specifications of principles found in "ordinary morality" - Principles in ordinary morality and their connection to full-fledged theories like Utilitarianism, duty-based theories, theory of rights and virtue ethics. - GDPR. -Brief overview of research ethics regulations after the Second World War
2. Scientific Honesty	- Identify and reason about relevant types of cheating and misconduct that may occur in connection with research. - Show an in-depth understanding of the concepts of plagiarism and idea theft. - Understand the most critical ethical issues in scientific publishing, including "self-plagiarism".	- Good research practice and deviations from it. - Misconduct is defined in terms of Fabrication, Falsification and Plagiarism. - Problems with misconduct. - Authorship, co-authorship, "self-plagiarism", predatory journals. - Data management, legal and moral requirements - How (allegations) of misconduct are handled (country dependent), whistleblowing.
3. Privacy, Harm, Consent	- Understand the various risks of harm and invasion of privacy, violation of integrity, and infringement of integrity that may arise in research. - Be able to reflect on their discipline and their research from this point of view. - Understand what "consent" means in different contexts and when such consent can, should or must be obtained.	- Morality is about constraining self-interest. - Consent as a way of removing constraints - Implicit and explicit consent. - The greater the possible harm, the stronger the need for explicit consent-Informed consent and its components (competence, disclosure, understanding, voluntariness). - The importance of informed consent (protects liberty, privacy, autonomy). - Deception and informed consent.
4. Scientific Value and the Value of Science	- Show in-depth insight into the possibilities and limitations of science, its role in society and people's responsibility for how it is used. - Be able to reason about the value of science in general and about one's subject area.	- The value-free ideal is put into question. Science is infused with values, and values enable scientific progress. - The value of science and its realisation: - What value? (Intrinsic value, welfare, liberty, emancipation). - The beneficiaries (Science, employer, researcher, informants, industry, the public): - Spreading (Scientific articles, conferences, blog posts, policy experts) - The values in science: - Scientists shape the values of others. - Values behind choices (Choices of theory, methodology, language use, communication of results): - Values are needed to bridge the gap between evidence and theory.
5. Research Ethics Review	- Be able to assess whether a research project should or must undergo ethical vetting and to know how to apply for ethical vetting based on their research area.	- National regulations. - How to apply (the students work on their applications).

the other hand, different personal and social interests that are affected by the research process or its results. This course gives an overview of ethical conflicts that researchers need to be aware of and be prepared to handle in their work. It introduces some conceptual and theoretical tools from philosophical ethics, for example regarding the valuation of consequences of actions, regarding rights and duties, and ethical comportment. It also gives a short overview of relevant rules and regulations. (Stockholm University 2022a).

Research ethics 2: Scientific conduct and misconduct

Content

Questions about scientific misconduct concern situations where researchers are tempted to put their personal, economic or career interest before the interests of science and the scientific community. An important area regards plagiarism and stealing ideas, results or data from other researchers. There are many clear cases of plagiarism, but also borderline cases where conceptual clarity and a reflective attitude concerning good practice is important. These questions are related to a set of issues around publication ethics, which also raises the problem of "self-plagiarism." Other kinds of misconduct concern the handling of research data, from fabrication and forgery to misleading presentation of data, and deficient the preservation and accessibility of data to control and further research. The relevant problems are treated in connection with real examples and problematic situations from the participants' own experiences. (Stockholm University 2022b).

Research ethics 3: Privacy and consent

Content

Much research in the human sciences involves participants from outside of the scientific community, for example giving information through surveys or interviews, or by taking part as subjects in experiments. Research must be planned and conducted with respect for the safety and personal integrity of such persons. A growing new field which raises these questions is research on the internet and on social media. A key concept in this connection is "consent" and the form in which consent can be sought and given in different contexts. Another related problem complex concerns research on vulnerable or discriminated groups, that may be negatively affected by the research process or its results. (Stockholm University 2022c).

Research ethics 4: The value of science

Content

Ethical considerations in research presuppose that other interests are balanced against the scientific value of the research and its expected results. But what is worth knowing and why? How can one balance the priorities that are made within a scientific discipline against the needs and wishes of society at large? Does the scientific community have a responsibility for the knowledge culture of society as a whole, and does this have any implications for the conduct of individual researchers? Under what circumstances should the researcher take up the role as expert and how should one behave in that role? (Stockholm University 2022d).

Research ethics 5: Ethical vetting of research projects

Content

This course is aimed at practical questions regarding ethical vetting, with direct relevance for the research projects of participants. What projects must be, or should be, formally vetted? How does one write an application and how is it assessed? The course involves teachers with experience from both sides of the process—to apply for and receive approval, and to assess applications. Participants will have the opportunity to work on their own projects: do they need ethical vetting and how should the application be formulated? (Stockholm University 2022f).

Challenges

Teachers of research integrity face numerous challenges, the most salient being that the subject is inherently ethical and complex. Engaging students in meaningful discussions about ethical dilemmas, fostering critical thinking, and promoting a culture of ethical awareness exemplify this challenge. The ways in which this challenge is met affect the quality and impact of the teaching.

With reference to a recently developed Taxonomy for Research Integrity Training (TRIT) by van den Hoven et al. (2023), the impact of the teaching can be classified and assessed with reference to different parameters located at different levels of impact.[4] This taxonomy makes it possible to describe the content and structure of research integrity courses and locate their effects on the different levels. The taxonomy also makes it possible to locate the challenges in a corresponding way. Challenges to teaching research integrity can be classified with reference to it.

The taxonomy consists of four levels based on the Kirkpatrick model of evaluation. The first is, in broad outline, about (potential) course participants' expectations to engage in research integrity courses. The second level is about the classroom performances of the course participants, i.e., whether they can reason with responsible interaction or apply a research integrity approach to arrive at a well-justified decision in a research integrity dilemma. The third level is how the course participant applies research integrity outside the classroom. The fourth and final level concerns the ways in which course participants impact institutions and wider society, i.e., more responsible research conduct (van den Hoven et al. 2023 p 14).[5]

In connection to the impact on broader society, and in addition to the effect on nurturing high-quality science, we would like to emphasise that research integrity teaching plays a crucial role in fostering public trust in scientific methods and results, thereby promoting respect for human autonomy and the functioning of democracy (Bouter 2024; Pamuk 2024; Resnik 2011).

As teachers of research integrity, our goals are usually high, but we need to realise that we often will not be able to reach effects at all levels of the taxonomy. Of course, we would like to see an impact on all TRIT levels. However, as planners and teachers

[4] The research integrity course package outlined in the manual described in this article has not yet been evaluated using the TRIT taxonomy. However, the description of the course package now provides a foundation for a more systematic evaluation based on TRIT. To date, the course package has been assessed through more traditional methods, such as participant and teacher surveys, where it has received high ratings. These evaluations correspond to level 2 of the TRIT taxonomy.

[5] See also, Abdi S, Pizzolato D, Nemery B, Dierickx K (2021); Haven TL, Tijdink JK, Martinson BC, Bouter LM (2019).

of research integrity, we have the most control over levels 1 and 2, and the challenges teachers face at these levels. In Section "Further Challenges", we will also address some of the foremost challenges relating to TRIT levels 3 and 4. Please note that the challenges are not mutually exclusive; on the contrary, they often overlap.

Is ethics necessary?

Some students and researchers may find ethical considerations irrelevant, viewing them as an additional burden rather than an essential aspect of responsible research. Many challenges in teaching research integrity revolve around this attitude: "Ethics is not relevant to me or my research project." This attitude often covers one of the following alternatives.

1. "I do not face any ethical problems in my research."
2. "It is obvious what the right thing to do is."
3. "There is no need for ethics; the methodological rules, law and experienced peers provide sufficient guidance."
4. "Research integrity training is not for me since there are no objectively correct answers to moral questions.

These attitudes among course participants are problematic and need to be addressed. In this subsection we describe possible ways to do this.

1. "I do not face any ethical problems in my research"

Some students think they do not face any ethical problems in their research. This is a fundamental mistake. Teachers must help the course participants understand that they make choices throughout the research process and all choices can be evaluated from a moral point of view. You can always raise the question of whether or not the choice made was the morally right one. Given a vast number of interesting research topics but limited resources and limited numbers of researchers, what are the most important research topics you could address? Most researchers view their research as very important—and of course, it is!—but we seldom consider the choices we forego; are they perhaps more important?

It is also important for the teacher to stress that unethical research can lead to skewed or biased results, undermining the trustworthiness of the findings and damaging the reputation of researchers and institutions. Thus, awareness of and upholding ethical standards in research is essential for maintaining the credibility and integrity of the scientific community.

2. "It is obvious what is the right thing to do"

Some doctoral students hold firmly to their moral opinions regarding right and wrong, often failing to recognise that others may not share their views or that these opinions may be more controversial than they initially appear. For instance, many researchers think that it is evident that all scientific results should be published (Munthe, Welin 1996; Shamoo, Resnik 2022). It might indeed be correct that all scientific results should be published, but it is not obvious that they should. For

instance, the results obtained from the Manhattan Project during the Second World War were indeed scientific, but it is unclear whether the researchers should have published them. This illustrates that research ethical issues involve conflicts of interest. In most cases, there are numerous stakeholders, and it often needs to be clarified how their interests should be balanced against each other. This balancing is what ethics is all about, which means that ethics is unavoidable when striking a proper balance between stakeholders in research.

3. "There is no need for ethics because scientific methodology, the law, and experienced peers provide sufficient guidance."

Some doctoral students agree that they face ethical problems in their research but claim that reference to legal frameworks, the practice of experienced peers, or the scientific method give them what is needed to obtain ethical guidance. It is crucially important that teachers stress that legal requirements are essential to be ethically responsible in research, as the legal requirements attempt to capture research ethical requirements. However, as is always the case, a regulative text cannot cover every potential aspect of a future reality. In research, complying with the legal requirements is crucial, but you can still be unethical while meeting the legal requirements (cf. *Vipeholm*). That is why more is needed than to conform to legal box-checking.

Regarding the reference to experienced peers, this prompts a similar response from the teacher. Experienced peers are often valuable assets and might act as critical friends. Still, just because you follow an experienced peer does not mean that you conduct ethical research. Indeed, some of the most infamous miscarriages of research integrity involve misplaced trust in a person with authority higher up in the ranks.

Thus, even if legal considerations are of great importance and we have much to learn from experienced peers, ethical issues that researchers face still need to be settled. Even if we had a complete description of all the non-moral facts, that description would not answer the question of what we ought to do. Thus, the teacher must help the students understand that we must resort to principles or values to bridge the gap between Is and Ought.

4. Are there objectively correct answers in ethics?

At this stage, some students may argue that teaching research integrity is futile since there is nothing to be right or wrong about in ethics. The teacher needs to problematise this train of thought and that takes some effort.

The idea that there is nothing right or wrong about morals is a position elaborated by many philosophers (e.g. Mackie 1990; Stevenson 1944; Tersman 2006). They typically substantiate their position with reference to widespread moral disagreements. They highlight that over time, there has been extensive disagreement between different people and cultures about what is wrong to do, what should be done, and what may be done from an ethical perspective. The widespread disagreement over moral questions suggests, these philosophers argue, that there are no correct answers to moral questions.

To the student convinced by the argument that there is no moral right or wrong, the teacher must point out that this cannot be taken for granted. It needs to be clarified

that the strength of the argument is not apparent. To begin with, there seems to be a fair amount of agreement on fundamental values, such as that it is wrong to kill innocent people, that promises should be kept, and that it is wrong to steal. The empirical question of how widespread the agreement is and whether it has increased over time is essential, but arguably, the extent of the disagreement is exaggerated.

Moreover, the teacher should also stress that even if two people disagree on whether a specific action is right or wrong, the disagreement is sometimes rooted in conceptual disputes, meaning that debaters talk past each other. In addition, even when there is substantial disagreement, the disagreement may be located in disagreement over empirical facts. For example, two utilitarians may disagree about whether a particular course of action is right because they disagree about the consequences of the action. This means the disagreement between the two at root is empirical, not moral.

It is essential that teachers continue reminding the students that morality is about conflicts of interest involving numerous stakeholders in the course of our daily practical lives. How to share candy with siblings? How to divide an inheritance? How to distribute funding among equally merited research proposals? How to settle authorship questions, or how and to what extent to finance higher education? These examples highlight that these practical questions are hard. More precisely, who are the stakeholders, and what are their interests? How strong are they? How are the stakeholders affected by the decisions we make in the short and long run? All in all, the teacher of research integrity should stress that these considerations have led numerous philosophers to conclude that disagreement over ethical issues is not that surprising and is arguably explained concerning tricky empirical questions (Brink 1989; Timmons 2012). Overall, the argument from disagreement is more problematic than it seems.

In the same spirit, it probably has explanatory value for the course participants that the teacher highlights that our argumentative practice even suggests that there are objective moral truths, just as some prominent philosophers argue (Bergström 1981; Kant 2020 [1785]; Smith 1994). They stress that we take ethical issues seriously and critically evaluate each other's moral outlooks and arguments in much the same way as we evaluate arguments with pure factual content. Let us illustrate this. Animal experiments are conducted daily at research institutes and pharmaceutical companies. We often consider this morally acceptable. At the same time, we believe it would be wrong to subject humans to the same kind of experiments. Can these opinions be justified? Some might argue that we have the right to use animals for our purposes because we have always done so.

Is this a strong argument? It is clearly about ethics and we evaluate it along the lines in which we evaluate arguments with purely empirical content. It holds for all arguments that they are strong only if they have reasonable premises that are relevant to the arguments' conclusions (Feldman 2013). The argument outlined above does not satisfy these conditions. Make this clear to the course participant: The premise is unclear, making it difficult to grasp the argument, but if the premise is interpreted strictly, the premise is false; there are plenty of people who have not made use of animals for their purposes. If the phrase is interpreted to mean that many people have used animals for their purposes, the premise is reasonable. However, even if it is, the premise is irrelevant to the conclusion. Throughout history, men have exploited women, whites have exploited people of

colour, and adults have exploited children. This does not mean that women should be subordinate to men, that whites should oppress people of colour, or that adults have the right to take advantage of children. On the contrary, we consider these phenomena morally reprehensible.

To summarise this subsection on whether ethics is necessary, it is important to stress that whether or not there are objective moral truths is one of the most contested issues in moral philosophy, and prominent philosophers have elaborated different versions of the arguments outlined above. This means that it is vital for the teacher of research integrity to stress that it is premature to take the view that there are no objective moral truths for granted and, based on that argument, that it is futile to teach research integrity. To complicate things even more, even if there are no objective moral truths, it does not follow that every course of action is allowed or that all actions are of equal moral merit. Some actions are morally "better" than others, and we still need to reason carefully for why this is so. This also goes for research ethical questions. Hard thinking is still required for course participants to address them responsibly, and principles or other values play a crucial role in this. PhD students must know this.[6]

The challenges described above are theoretical and related to the ethical nature of research integrity. The challenges obviously relate to PhD students' motivation to participate in research integrity teaching and how they perform in the classroom and on exams. The challenges also have effects on TRIT levels 3 and 4, but they are more indirect.

Managing expectations?

There are also practical challenges facing teachers of research integrity. One challenge revolves around framing the teaching and consequently managing realistic expectations. It's crucial to underscore that research integrity teaching along the lines described in Section "Background" has limitations. It isn't designed to provide definitive solutions to complex ethical dilemmas in research. Instead, it aims to equip students with tools to analyse such dilemmas. Research ethical principles and deeper moral values found in common morality or comprehensive ethical theories identify morally significant aspects of actions, situations and motives. When teaching research integrity, it's vital to highlight that ethical principles serve precisely this purpose, guiding us on what considerations to weigh in our moral deliberations. Research integrity teaching aims to offer precisely these analytical tools for carefully dissecting a dilemma rather than presenting a straightforward answer.

Many PhD students earnestly engage with research ethical questions, demonstrating sincere concern and a profound emotional investment in seeking resolutions. From our

[6] Traditionally moral philosophy is subdivided into three separate fields: Metaethics, normative ethics and applied ethics. Applied ethics deals with the application of fundamental principles on specific domains such as medicine, journalism and research. Normative ethics develops general theories about what is morally right and wrong. Famous examples of theories in normative ethnic include utilitarianism, theories of right, theories of duties and virtue ethics. Metaethical theories address the issue of whether theories in normative and applied ethics can be true or not; that is, broadly speaking whether there is objective truth, subjective truth or no truth at all in theories about what is morally right and wrong. There are so many textbooks on applied ethics. The most famous modern book being Peter Singer's (2011) *Applied ethics*, famously raising the issue of animals' moral status. Some very useful books in normative ethics are, Tännsjö (2013), a very basic and pedagogical book; Driver (2007), is still basic but slightly more detailed; Timmons (2012), covers the basics but in a sophisticated manner. In metaethics Fisher (2014), is a good starting point; Miller (2014) is thorough but demanding.

experience, we've observed that the greater the emotional investment, the stronger the desire for a clear-cut answer to their quandary. The teacher needs to manage expectations to avoid disappointing such students and undermining their motivation. One way to do this is, again, to emphasise the complex nature of all ethical problems and that it is, therefore, difficult to find a clear-cut answer to them. Do not expect easy answers but the tools to deal with hard problems.

What is the balance between theoretical depth and practicality?

The question of striking a proper balance between depth and practicality relates to the challenges above. Ethical questions are complex and require careful analysis. The analysis often involves nuanced distinctions and the exploration of abstract principles, which may distance teachers and students from the practical aspects of ethics. This tendency risks making research integrity teaching overly theoretical.

Many students and educators involved in research integrity may not have backgrounds in law or moral philosophy. How do you avoid getting too deep into the intricacies of moral philosophy while providing enough of an ethical framework that is of practical use to the student? For teachers who do not have a background in moral philosophy, the challenge is to be acquainted enough with the subject to convey the tools necessary for the student's independent moral thinking. The challenge for teachers with a background in moral philosophy is to tailor the theoretical content to practical issues, thus incorporating the students' perspectives and needs.

One way for the teacher to convey the ethical aspects of research without going too far into theories in normative ethics is to refer to famous and exciting research ethical transgressions. The students may identify similarities and differences in their research relating to such transgressions. Getting the students to reflect on their own practices is even more fruitful. This is, we suggest, most effectively accomplished through discussions with peers.

Such discussions can be orchestrated in many ways; here is one: The teacher emphasises that researchers encounter ethically significant decisions at various stages of the research process, provides illustrative examples, and then organises students into groups, instructing every student in the groups to outline an ethical dilemma they face in their research. When the whole class reconvenes, the teacher may ask representatives of the groups to summarise the group discussion. Using this collaborative learning method (see also Priess-Buchheit 2021), the teacher may highlight the dilemmas' crucial features, stress important distinctions and relate to research ethical guidelines or principles.

This approach makes research ethical problems tangible and relevant to students' experiences, as they are the problems students grapple with. Using this approach, the students realise that research ethical problems are interwoven with other issues. When the students start discussing the problems, they (hopefully) realise that research ethical problems cannot be adequately addressed without reference to research ethical principles (or virtues) and that these principles (and virtues) are connected to principles (or virtues) found within ordinary morality, which, in turn, relates to full-fledged ethical theories. Thus, students hopefully realise that an ethical problem related to a research study relates to the student's overall evaluative outlook. Awareness of the interconnection between specific research ethical questions and general principles is crucial for instructors' teaching endeavours.

A complementary method for achieving a proper balance is to employ co-teaching, where a researcher highly knowledgeable in moral philosophy collaborates with a researcher oriented towards empirical studies. The "ethicist" need not be acquainted with the specifics of the academic discipline in question, and conversely, the other researcher need not be fully familiar with moral philosophy. This dialogue format is likely to give course participants a sense of balance between ethical theory and research practice.[7]

Further challenges

The challenges outlined above primarily focus on TRIT levels 1 and 2, addressing issues directly impacting our core mission of planning and teaching research integrity. However, it is also essential to be aware of further challenges that relate primarily to TRIT levels 3 and 4.

PhD courses, programs and research projects often involve researchers from all around the world, making it challenging to teach universally applicable guidelines or values. For instance, the Global South's limited time and financial resources may make teaching high-quality research integrity difficult. Moreover, lack of institutional understanding or support can lead to resistance in planning and implementing research integrity teaching. We hope that this article may contribute to alleviating such challenges by providing a readily practical roadmap for research integrity courses.

It is crucial to acknowledge cultural differences and recognise that such disparities might raise questions about the general applicability of a course package like the one described above. In contexts where educational resources and institutional frameworks are often more robust, there may be greater emphasis on standardised training and education in research integrity. However, even in such, variations in cultural norms, academic traditions, and institutional practices can lead to disparities in the understanding and application of ethical principles. Where resources and infrastructure for higher education may be more limited, the landscape of research integrity training can be vastly different. Challenges such as inadequate funding, limited access to educational materials, and differing priorities within academic institutions can contribute to a lack of standardised training in research integrity.

Given such disparities, it is crucial to recognise that a one-size-fits-all approach to research integrity education may not be appropriate. Instead, educational initiatives should be tailored to specific contexts and needs. This may involve incorporating culturally relevant case studies, engaging local stakeholders in curriculum development, and supporting capacity-building initiatives in regions where resources are scarce. It might sound a bit grandiose, but by addressing these disparities and fostering a more inclusive approach to research integrity education, we can work towards promoting ethical research practices and advancing knowledge production on a global scale.

The recruitment of course participants partly depends on their motivation, and as described in "Is Ethics Necessary?", motivation is only sometimes high. Should research

[7] For many excellent practical exercises that can be used in achieving this balance, see:
https://www.path2integrity.eu/
https://embassy.science/wiki/Guide:Bbe860a3-56a9-45f7-b787-031689729e52
https://embassy.science/wiki/Training
A further excellent resource is, Iphofen (2009).

integrity courses be mandatory for PhD students? On one hand, the importance of the courses suggests that they ought to be. On the other hand, formal requirements may decrease motivation by causing participants to view the course as a burden rather than an essential component of responsible research. Moreover, the choice of course titles and descriptions can significantly influence students' decisions to enrol in courses and their level of involvement. Although we do not exhaustively address the issue of course participants' motivation (Koterwas, Dwojak-Matras, Kalinowska 2021), we want to point out that labels such as 'Research Ethics', 'Research Integrity' or 'Responsible Conduct of Research' might not be the most enticing when attracting course participants. Words do matter when it comes to prejudices and motivation.

Concluding remarks

The scientific community has a unique and crucial obligation to uphold the principles of research integrity. This responsibility is about ensuring that scientists adhere to good practices and fostering trust and credibility in scientific findings. Upholding research integrity in the ethical sense developed in this article is essential for informed decision-making and promoting the overall progress of knowledge. In these perilous times, when the idea of a free society is threatened on so many levels around the globe, trust in science is essential beyond the scientific community. To sow doubt about a common framework on what constitutes a fact, and the methods for establishing facts, is an important key step in making unreasonable normative positions acceptable. In this sense, research integrity is a crucial key defence for the tradition of the sovereignty of the individual as upheld by human rights, the rule of law (not the rule of men), and free and fair elections.

In this paper, we have presented a comprehensive description of a research integrity course package. Amidst the intricate differences across countries and research environments, we believe educators can derive significant value from aligning their teaching practices with the course package described. While some may need to make substantial adaptations to address specific challenges related to higher education ordinances, economic constraints, time limitations, and cultural nuances, we remain hopeful that our detailed description inspires their endeavours.

NERQ discussions have highlighted the challenges of teaching research integrity, particularly the difficulty of addressing its inherently ethical nature while ensuring the material is accessible to participants who may not have a background in moral philosophy. Moreover, our comprehensive description enhances understanding and knowledge regarding adequate research integrity teaching. It thereby enables comparisons between our course package and others, utilising the comprehensive TRIT framework proposed by van den Hoven et al. (2023).

With this article, we hope to contribute, albeit in a small way, to further European research integration by providing an 'oven-ready' manual for teaching research integrity. Many future teachers of research integrity work in countries that are yet to be admitted to the European Union, and the implementation of such courses may be a mandated part of this process. If we can share experience to benefit this process, we would consider this a significant contribution.

Appendix: The Practical Details of the Manual

In this Appendix, we will describe the implementation of the course package in more detail. We will reuse the course descriptions above to be as clear as possible. The learning outcomes below are direct quotes from the syllabi. After that, we present a list of specific issues to address during teaching, providing further information on the course content. We also give a list of the course literature, and finally, we provide an example of an assignment/examination, including its word count.[8] The courses, the learning outcomes, and the topics to address in the courses are summarised in Table 2.

Table 2 Courses, learning outcomes (as stated in the syllabi for the courses, Stockholm university) and topics to address

Course Name	Learning Outcomes	Topics to Address
Research Ethics 1: Introduction	- Understand basic research ethical questions. - Be familiar with important principles for argumentation in ethics - Be familiar with regulations that are significant to research ethics.	- Characterisation of ethical problems as involving conflicts of interest. - Solutions to ethical problems cannot be deduced from non-ethical premises (The Is-Ought gap). Reference to principles or values is needed. - Research ethical principles and their justification - Concerning the idea that adherence to them furthers the goals of science. - Concerning the idea that research ethical principles are specifications of principles found in "ordinary morality" - Principles in ordinary morality and their connection to full-fledged theories like Utilitarianism, duty-based theories, theory of rights and virtue ethics. - Nuremberg Code, Helsinki Declaration, GDPR
Research Ethics 2: Scientific Conduct and Misconduct	- Identify and reason about relevant types of cheating and misconduct that may occur in connection with research. - Show an in-depth understanding of the concepts of plagiarism and idea theft. - Understand the most critical ethical issues in scientific publishing, including "self-plagiarism".	- Good research practice and deviations from it. - Misconduct is defined in terms of Fabrication, Falsification and Plagiarism. - Problems with misconduct. - Authorship, co-authorship, "self-plagiarism", predatory journals. - Data management, legal and moral requirements - How (allegations) of misconduct are handled (country dependent), whistleblowing.
Research Ethics 3 Privacy and Consent	- Understand the various risks of harm and invasion of privacy, violation of integrity, and infringement of integrity that may arise in research. - Be able to reflect on their discipline and their research from this point of view. - Understand what "consent" means in different contexts and when such consent can, should or must be obtained.	- Morality is about constraining self-interest. - Consent as a way of removing constraints - Implicit and explicit consent. - The greater the possible harm, the stronger the need for explicit consent- Informed consent and its components (competence, disclosure, understanding, voluntariness). - The importance of informed consent (protects liberty, privacy, autonomy). - Deception and informed consent.

[8] We do not give directions on how to grade the exams. In general, though, the primary concern is whether the student has met the learning outcomes. Yet, one might ask what "meeting the learning outcomes" truly entails. In practice, an essential responsibility of teachers is to make this evaluation. As a flexible but meaningful benchmark, we propose that students should demonstrate the ability to independently address ethical issues in research—beyond simply checking legal requirements.

Course Name	Learning Outcomes	Topics to Address
Research Ethics 4: The Value of Science	- Show in-depth insight into the possibilities and limitations of science, its role in society and people's responsibility for how it is used. - Be able to reason about the value of science in general and about one's subject area.	- The value-free ideal is put into question. Science is infused with values, and values enable scientific progress. - The value of science and its realisation: - What value? (Intrinsic value, welfare, liberty, emancipation). - The beneficiaries (Science, employer, researcher, informants, industry, the public): - Spreading (Scientific articles, conferences, blog posts, policy experts) - The values in science: - Scientists shape the values of others. - Values behind choices (Choices of theory, methodology, language use, communication of results): - Values are needed to bridge the gap between evidence and theory.
Research Ethics 5: Ethical Vetting of Research Projects Review	- Be able to assess whether a research project should or must undergo ethical vetting and to know how to apply for ethical vetting based on their research area.	- National regulations. - How to apply (the students work on their applications).

Research Ethics 1: Introduction[9]

Content

Ethical problems involve conflicts of interest. In research ethics such conflicts are usually between, on the one hand, the scientific interest in generating new knowledge, and, on the other hand, different personal and social interests that are affected by the research process or its results. This course gives an overview of ethical conflicts that researchers need to be aware of and be prepared to handle in their work. It introduces some conceptual and theoretical tools from philosophical ethics, for example regarding the valuation of consequences of actions, regarding rights and duties, and ethical comportment. It also gives a short overview of relevant rules and regulations. (Stockholm University 2022a)

Learning outcomes

Completing the course, the student is expected to:

- Understand basic research ethical questions.
- Be familiar with important principles for argumentation in ethics.
- Be familiar with regulations that are significant to research ethics. (Stockholm University 2022a)

List of Issues to Address

- Characterisation of ethical problems as involving conflicts of interest.

[9] The course package at Stockholm University was given this name (not "research integrity"), and to stay true to the original text we use this name although it could equally well have been called a course package in research integrity.

- Solutions to ethical problems cannot be deduced from solely non-ethical premises (The Is-Ought gap). Reference to principles or values is needed.
- Research ethical principles and their justification
- Concerning the idea that adherence to them furthers the goals of science.
- Concerning the idea that research ethical principles are specifications of principles found in "ordinary morality".
- Principles in ordinary morality and their connection to full-fledged theories like
- Utilitarianism, duty-based theories, theory of rights and virtue ethics.
- Nuremberg Code, Helsinki Declaration, GDPR.

Literature

Drenth PJ (2012) A European code of conduct for research integrity. Promoting research integrity in a global environment, 161

Shamoo AE, Resnik DB (2022) Responsible conduct of research. 4th edn. Oxford University Press, New York

Skloot R (2010) Immortal Life of Henrietta Lacks. Crown Publishing Group., New York

Assignment/Examination

Consider your field and your research through an ethical lens. Identify ethical conflicts of interest and highlight any controversial or challenging ethical issues. Connect these reflections to the course material and aim to formulate preliminary judgments on the questions you pose (1200 words).

Research ethics 2: Scientific Conduct and Misconduct

Content

Questions about scientific misconduct concern situations where researchers are tempted to put their personal, economic or career interest before the interests of science and the scientific community. An important area regards plagiarism and stealing ideas, results or data from other researchers. There are many clear cases of plagiarism, but also borderline cases where conceptual clarity and a reflective attitude concerning good practice is important. These questions are related to a set of issues around publication ethics, which also raises the problem of "self-plagiarism." Other kinds of misconduct concern the handling of research data, from fabrication and forgery to misleading presentation of data, and deficient the preservation and accessibility of data to control and further research. The relevant problems are treated in connection with real examples and problematic situations from the participants' own experiences. (Stockholm University 2022b)

Learning outcomes

Completing the course, the student is expected to:

- Identify and reason about relevant types of cheating and misconduct that may occur in connection with research.
- Show an in-depth understanding of the concepts of plagiarism and idea theft.

– Understand the most critical ethical issues in scientific publishing, including "self-plagiarism". (Stockholm University 2022b)

List of Issues to Address

– Good research practice and deviations from it.
– Misconduct is defined in terms of Fabrication, Falsification and Plagiarism.
– Problems with misconduct.
– Authorship, co-authorship, "self-plagiarism", predatory journals.
– Data management, legal and moral requirements.
– How (allegations) of misconduct are handled (country dependent), whistleblowing.

Literature

Hansson SO (2011) Do We Need a Special Ethics for Research?. Science and Engineering Ethics 17:21–29

Shamoo AE, Resnik DB (2022) Responsible conduct of research, 4th edn. Oxford University Press, New York

Assignment/Examination

Begin your exploration by considering the perspectives of Smith, Bhutta, and Crane.[10] Engage in critically discussing their suggestions regarding the criminalisation of research misconduct. Utilise course literature and pre-recorded lectures to address the following inquiries: What is research misconduct? What are the reasons supporting the criminalisation of research misconduct? What are the arguments opposing criminalisation? Share your perspective and provide reasoning for your answer! (1500 words).

Research ethics 3: Privacy and Consent

Content

Much research in the human sciences involves participants from outside of the scientific community, for example giving information through surveys or interviews, or by taking part as subjects in experiments. Research must be planned and conducted with respect for the safety and personal integrity of such persons. A growing new field which raises these questions is research on the internet and on social media. A key concept in this connection is "consent" and the form in which consent can be sought and given in different contexts. Another related problem complex concerns research on vulnerable or discriminated groups, that may be negatively affected by the research process or its results. (Stockholm University 2022c)

Learning outcomes

Completing the course, the student is expected to:

[10] In the assignment, the students are supposed to relate to the content in two short articles. Both articles are presented to the students as part of the assignment. Smith R (2013) Should scientific fraud be a criminal offence. British Medical Journal blog 9, 12; Bhutta ZA, Crane J (2014) Should research fraud be a crime? BMJ:349. doi: https://doi.org/10.1136/bmj.g4532.

- Understand the various risks of harm and invasion of privacy, violation of integrity, and infringement of integrity that may arise in research.
- Be able to reflect on their discipline and their research from this point of view.
- Understand what " consent " means in different contexts and when such consent can, should or must be obtained. (Stockholm University 2022c)

List of Issues to Address

- Morality is about constraining self-interest
- Consent as a way of removing constraints
- Implicit and explicit consent.
- The greater the possible harm, the stronger the need for explicit consent.
- Informed consent and its components (competence, disclosure, understanding, voluntariness).
- The importance of Informed consent (protects liberty, privacy, autonomy).
- Deception and informed consent.

Literature

Franklin M, Wertheimer A (eds) (2010) The Ethics of Consent: Theory and Practice. Oxford University Press, Oxford

Assignment/Examination

In your research, do you intend to engage (or have you already engaged) with human subjects? If affirmative, contemplate your research's potential issues related to informed consent and/or privacy. How have you managed or do you plan to address these concerns? Conversely, if your response is negative, seek an instance within your field that pertains to human subjects research. Identify the concerns regarding informed consent and/or privacy in this research and explore the strategies employed by the researchers to manage them. (1200 words).

Research ethics 4: The Value of Science

Content

Ethical considerations in research presuppose that other interests are balanced against the scientific value of the research and its expected results. But what is worth knowing and why? How can one balance the priorities that are made within a scientific discipline against the needs and wishes of society at large? Does the scientific community have a responsibility for the knowledge culture of society as a whole, and does this have any implications for the conduct of individual researchers? Under what circumstances should the researcher take up the role as expert and how should one behave in that role? (Stockholm University 2022d)

Learning outcomes

Completing the course, the student is expected to:

– Show in-depth insight into the possibilities and limitations of science, its role in society and people's responsibility for how it is used
– Be able to reason about the value of science in general and about one's subject area. (Stockholm University 2022d)

List of Issues to Address

– The value-free ideal is put into question. Science is infused with values, and values enable scientific progress.
– The value of science and its realisation.
– What value? (Intrinsic value, welfare, liberty, emancipation).
– The beneficiaries (Science, employer, researcher, informants, industry, the public).
– Spreading (Scientific articles, conferences, blog posts, policy experts).
– The values in science
– Scientists shape the values of others.
– Values behind choices (Choices of theory, methodology, language use, communication of results)
– Values are needed to bridge the gap between evidence and theory.

Literature

Douglas H (2016) Values in Science, in Humphries P (ed) The Oxford Handbook of Philosophy of Science. Oxford University Press, Oxford

Elliott KC (2017) A Tapestry of Values: An Introduction to Values in Science. Oxford University Press, Oxford

Assignment/Examination

Examine three aspects where values are significant in your current or future work. For each, specify (a) the value in question, (b) analyse its role in your work, and (c) explain why the value of playing that role is scientifically acceptable. Refer to lectures and literature as needed. (1200 words).

Research ethics 5: Ethical Vetting of Research Projects

Content

This course is aimed at practical questions regarding ethical vetting, with direct relevance for the research projects of participants. What projects must be, or should be, formally vetted? How does one write an application and how is it assessed? The course involves teachers with experience from both sides of the process - to apply for and receive approval, and to assess applications. Participants will have the opportunity to work on their own projects: do they need ethical vetting and how should the application be formulated? (Stockholm University 2022f)

When teaching this sub course we advise that teachers with experience from both sides participate in the teaching of the review process – to apply for and get approval

and to assess applications. The students are allowed to work on their projects: Do they need to be ethically tested and in that case, how should an application be designed?

Learning outcomes

Completing the course, the student is expected to:

- Be able to assess whether a research project should or must undergo ethical vetting and to know how to apply for ethical vetting based on their research area. (Stockholm University 2022f)

List of Issues to Address

- National regulations.
- How to apply (the students work on their applications).

Literature

Here we cannot refer to any specific literature, but consult the relevant National Ethical Review Authority.

Assignment/Examination

The ethical vetting application form requires researchers to contemplate the costs and benefits of their proposed research protocol. Presented below is a translated excerpt from the pertinent section of the form. Consider your PhD project (or your master/bachelor thesis if your PhD project is yet to be determined) for this task. Ensure that the relevant features of your research project are delineated during the process.

- Outline the potential risks participants may face by participating in your study.
- Highlight the advantages of your study for participants.
- Evaluate the relationship between the costs and benefits linked to the project.
- Explain how the project is structured to minimise risks for participants.
- Identify and specify potential ethical issues that could arise in a broader context due to the project (1000 words).

Examination

The assignments have approximately the same upper length constraint (1200 words) and the same structure. Each task compels students to actively address issues about their research and apply the insights gained from the assigned readings. The students have two weeks to complete and submit their assignments through the course website. The assignments are graded as "passed" or "failed". The grading teacher gives feedback to every student regarding the disposition, the content (stressing specific theoretical issues or distinctions), and evaluations of the strengths and drawbacks of the students' arguments. Sometimes, the feedback also includes references to further readings.

Implementation

The pandemic has shifted university teaching from traditional face-to-face methods to complete online courses, including pre-recorded lectures, seminars, and tests. This change offers advantages such as lower-cost, flexible access to high-quality learning and immediate personalised feedback (Wisniewski et al. 2020; Mertens et al. 2022). However, it also requires strong self-regulation from students (Owston et al. 2013; Easterbrook & Hadden 2021) and may lead to isolation and reduced motivation (Flanigan et al. 2022). To address these challenges, the package can also be given in a blended format, combining the best of onsite and online teaching. The curricula, content, literature, and assignments are the same; the implementation differs.

Onsite

When given onsite, each course has an obligatory four-hour seminar, where approximately two hours are allotted to lecturing and two hours to discussions. Questions and comments from the students naturally break up the lectures.

Regarding structured discussions, students are divided into groups of 4-5 and assigned a specific question to deliberate. They are instructed to formulate a reasoned answer, drawing upon their experiences, course literature, and lecture content. The task for the discussion is a question very similar to the actual home assignment. (The pedagogical motive is to get the course participants thinking about difficult research integrity dilemmas, in order for them to be better prepared for the home assignment.) Around an hour later, the entire group gathers again, and a designated student from each subgroup shares their group's preliminary conclusions with everyone. This sparks a broad discussion about the various answers proposed by the groups. The lecturers provide a summary to conclude the seminar, effectively wrapping up the session.

Online

When given in a digital format, the implementation of the courses differs. The students apply for the courses and, when registered, get access to a learning platform where each course in the package has its tab. Under that tab, the students find two to three pre-recorded lectures, each about 10-15 minutes. (These lectures correspond to the lectures when the courses are given on campus). The students are also encouraged to answer a multiple-question quiz covering the content of the pre-recorded lectures and the readings for the courses. When finishing the quiz, the students can immediately check their results. The students can do the quizzes as many times as they want. The idea behind the quizzes is to prepare the students for the seminar, which will be more rewarding and better prepare the students. This setup means that the mandatory seminar is now two hours shorter. At the beginning of the workshop, the lecturer gives a concise introduction and divides the students into break-out groups. The discussion follows the exact instructions as on the ones provided on campus. The assignment and its proceedings are the same as when the course is given on Campus.

Abbreviations

ALLEA All European Academies
CPE Commission for Postgraduate Education
GDPR General Data Protection Regulation

TRIT Taxonomy for Research Integrity Training

Clinical trial number
Not applicable.

Authors' contributions
The structure of our article was conceived among all authors. The work of putting the article together was undertaken by H S and C H. All additional authors have contributed significantly to the to the draft manuscript as it was worked into the final text. This holds in particular in relation to Section "Challenges". M vd H and J P-B contributed to the entirety of the final text.

Funding
Open access funding provided by Stockholm University.

Data availability
No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate
Not applicable.

Consent for publication
All authors consent for publication.

Competing interests
The authors declare no competing interests.

Received: 11 September 2024 Accepted: 5 February 2025
Published online: 01 April 2025

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