Research Publication Ethics and Effective Science Communication

Graduate Course SCE112.2 and SCE113.2, HBCSE, TIFR

2025-26 Winter Semester (Jan – April 2026)

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Credits: 4

Duration: Approximately 30 contact hours + 14 self-study hours

Mode of Teaching: In-person classroom teaching, some part of the course will require self-study of videos and papers

Time and Location: Tuesdays and Thursdays 10 AM to 12 Noon

Course outline:

The course has a twofold objective, the first being to familiarize students with important aspects relating to ethical considerations especially for research publications ranging from common sense guidelines to regulatory frameworks; and the second being to explore various approaches by which science can be effectively communicated to specialist and non-specialist audiences, with a focus on science communication relevant for graduate school and an academic career – from formal writing of journal papers, expository/ popular articles, resumes and grants, to informal platforms like blogs and social media.

1. Introduction to the course

Research Publication Ethics (examples of topics covered)

2. Overview of Ethics
3. Overview of Ethics in Science Education
4. Plagiarism, data falsification and similar issues
5. UGC's guidelines on Research Ethics
6. Examples of unethical practices in science education research
7. Ethics in the Age of Generative AI
8. Misinformation and disinformation

Effective Science Communication (examples of topics covered)

9. Understanding the journal publication process
10. Structuring a paper
11. From words to sentences to paragraphs – optimizing writing
12. Overview of figures and drawings
13. Writing appropriate abstracts
14. Paraphrasing scientific papers
15. Resumes and CVs
16. Grant writing
17. Informal science communication
18. Oral and posters presentations for a technical/ nontechnical audience

Self-study component (some of these will require watching video recordings)**:**

1. UGC guidelines on Academic Integrity and Research Quality, and Good Academic Research Practices
2. Case studies on ethics in science education
3. Writing their own CV
4. Reading on ethics in the age of AI

Learning Outcomes: We hope the practical examples and exercises will help the students navigate the ethical issues connected to research and specifically research publication, and also become more effective communicators. Towards this, we specifically hope that students:
1. Become aware of both common-sense guidelines and regulatory frameworks related to research publication ethics and develop best practices to ensure appropriate dissemination of research.
2. Learn to effectively communicate science to the appropriate audience in a precise and cogent manner, through evidence-based arguments.
3. Learn the iterative process of improving scientific communication skills with the help of the feedback received.

Course format: We will have a very interactive classroom format with plenty of discussions and small in-class writing tasks. Hence it is important that students attend all classes, as far as possible, and be part of classroom discussions. While some aspects of our discussions will be specific to scientific content, a lot of what we cover, the different formats and approaches are likely to be useful in a broader context. Thus, the course has a strong transferrable skills content.

Assessment: There will be several small, and one or two longish writing assignments through the semester (in lieu of "exams"). You must meet these assignment deadlines so that we can discuss and provide feedback in a timely fashion. Students taking the course for credit will be graded on the basis of two writing assignments (50% of marks), and on shorter, in-class, writing tasks / quizzes and overall participation and thoughtful peer feedback (50% of marks). Some of the assessment will be based on the video materials for self-study. We will schedule deadlines/important dates in the first two weeks of class. Unexcused absences and delays in submitting course assignments may have consequences on your grade!

Course materials: There is no prescribed text for this class. We will provide links/handouts for all necessary reading/viewing materials and provide a list of suggested reference materials that may be helpful.

If you are interested in registering for this class, please send an email to mayuri@hbcse.tifr.res.in. If you already know the other classes that you are taking during the semester, please include that information as well.

Want to sit in/audit this course? Sure, but again, to be useful, active participation is needed, and unless you are willing and confident of being able to attend most of the sessions, and also write and submit your work in a timely manner, please note that this may not be very useful! We will try to give individual feedback on writing assignments to all participants, but registered students will have priority.