

## Research Publication Ethics and Effective Science Communication

Graduate Course, HBCSE, TIFR

Course Number: SCE109.2

2023-24 Monsoon Semester (Aug—Dec. 2023)

**Instructors:** Anuttama Kulkarni ([anuttama@hbcse.tifr.res.in](mailto:anuttama@hbcse.tifr.res.in)) and Arnab Bhattacharya ([arnab@hbcse.tifr.res.in](mailto:arnab@hbcse.tifr.res.in))

**Credits:** 2

**Duration:** 14 sessions

**Starting from** August 7, 2023

**Mode of Teaching:** in-person classroom teaching

**Course Day and Time:** Monday [9:30 AM to 10:45 AM] and Thursday [9:30 AM to 10:45 AM]

**Location:** Room 217, Main Building, HBCSE

**Course outline:** This class aims to guide graduate students develop their skills in the critical reading and writing of scientific literature, with an emphasis on science education literature. Writing is an essential tool to convey academic thought, and written output—publications, grant proposals etc. — is often a key metric in evaluating academic progress. While most writing skills can only be developed with practice, there are several standard “tips and tricks” that can make this process a lot easier. We will focus on reading both well-written and not-so-well-written work and analysing them critically to examine how they address their audience, justify their claims, and use quantitative and visual evidence. This will help as we see how to build effective arguments, appropriately using evidence as well as secondary source material, and improve on the process of writing a scientific manuscript.

Integral to this is an underlying responsibility of integrity in conducting and reporting research. Hence, it is important to be aware of important concerns relating to research publication ethics such as plagiarism, falsification, fabrication, or misrepresentation. From identifying predatory journals to guidelines on authorship, and from discussing image manipulation to appropriately citing previous work, the course will also provide a broad summary of the key issues of research publication ethics.

Any science communication goes through an iterative process, through rough drafts or mock presentations followed by revisions that improve only with review and constructive criticism. Be prepared to share your work to be critiqued by your instructors and fellow course mates! Being able to review and help edit each other’s work is a helpful tool in learning to write well. We will try to cover a variety of different writing styles, from research articles, grant proposals, CVs and job applications, to even lay abstracts and summaries for a non-scientific public audience.

Please note that while our discussions will hopefully help improve the construction of precise sentences, coherent paragraphs, and well-ordered documents, this is NOT aimed to be primarily a course in English grammar and usage!

**Learning Outcomes:** We hope the practical examples and exercises will help the students become more effective writers. Towards this, we specifically hope that students:

1. Develop the ability to effectively communicate science and science education-related findings to the appropriate audience in a precise and cogent manner, through evidence-based arguments.
2. Read relevant primary and secondary literature carefully and offer constructive criticism.
3. Understand the iterative process of improving scientific writing skills with the help of the feedback received.
4. Use the knowledge gained to also effectively write other academic documents, like grant proposals, and write for non-specialist audiences.
5. Be aware of both common-sense guidelines and regulatory frameworks related to research publication ethics and develop best practices to ensure appropriate dissemination of research.

**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 you attend all classes, and be part of the discussions that help us all. There will also 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. We will schedule our class sessions taking into account your other courses and commitments, and announce the deadlines/important dates in the first two weeks of class. Unexcused absences and delays in submitting course assignments may have consequences on your grade!

**Assessment:** 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, and overall participation and thoughtful peer feedback (50% of marks).

**Course materials:** There is no prescribed text for this class. We will provide links/handouts for all necessary reading 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 [anuttama@hbcse.tifr.res.in](mailto:anuttama@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, participation is needed, and unless you are willing and confident of being able to attend all the sessions, and also write and submit your work in a timely manner, please note that this may not be very useful!