



Online Ethics Center  
FOR ENGINEERING AND SCIENCE

# A Bottom-Up Approach to Building a Culture of Responsible Research and Practice in STEM

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## Year

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## Abstract

This Project aimed at situating responsible research and practice education within the research environment. Graduate students in research groups worked together to develop guidelines to address ethical issues they have faced in their research. Based on interactive exercises and discussions, an ethics education module involving the bottom-up writing of guidelines will be developed.

## Body

**The OEC Project Pages are intended to cultivate a community of practice and allow ethics researchers, educators, and practitioners to more effectively disseminate their work. This Project Page provides a detailed overview and relevant resources for an on-going science or engineering**

**ethics project. Once you've explored this project, visit the "Projects" section under "Resources" to see more ethics projects.**

## Description

Building a Culture of Responsible Research in STEM? focused on bringing research ethics education out of the classroom and into the research environment. The project asked STEM students engaged in research in a series of workshops to develop discipline and laboratory-specific ethical guidelines to help resolve ethical issues that arise in the course of research. The project's goal was to positively influence researchers' understanding of ethical research and practice issues, enhance their handling of these issues, and promote an ethical culture in their respective labs and across campus.

During the project, the project team ran six workshop series at the Illinois Institute of Technology and the University of Texas at San Antonio involving graduate students from various disciplines. The final guidelines developed by the students address various ethical topics ranging from more traditional RCR topics (data management, authorship, human and animal research subjects) to guidance for handling interpersonal relationships between students and between faculty and students. Topics falling in this category included equity, fairness, and inclusion, challenges faced by minority students and international students, and developing a shared understanding of responsibilities and expectations between supervisors and students. Students also discussed how they could play a more prominent role in shaping ethics education and ethical cultures in research environments. One suggestion that appeared several times was to form an ethics committee made up of graduate students and faculty that could collaboratively address ethical challenges a department faces.

Along with developing the workshop series, the project team completed a literature review, a university-wide survey, and a series of 30 interviews with graduate students engaged in research. The results indicate that while all community members tend to view issues classified as research misconduct as the most important activities to avoid, lab members rarely discussed or witnessed these kinds of issues. The study points to a consensus among students and faculty about the critical ethical issues in STEM and the need for more discussion and attention to be

paid to issues of communication, collaboration, and interpersonal relationships in the research environment. Data from the student interviews also points to the vital role that research supervisors play in shaping the ethical culture of labs. These studies also help identify critical features of labs that successfully build solid and collaborative relationships among researchers. Our research points to the need for open communication between faculty and students that explores stakeholders? cultural norms, standards, expectations, and responsibilities in the research process. In the current competitive, quick-paced research environment, few opportunities for these kinds of discussion emerge. Interventions such as our workshop series create such space and provide a format for starting these crucial conversations.

The project team has put together an instructor's guide that includes slides, handouts, and other materials for labs and departments interested in running a version of this workshop series. This approach was also shared during a two-day workshop held in April of 2021 titled "Building Inclusive Ethical Cultures in STEM: A Virtual, Practice-Based Workshop." The workshop featured seventeen projects worldwide that sought to share best practices to effectively engage students and faculty working in research labs and lab-based classrooms to build inclusive, ethical cultures. Finally, participants in the workshop have been invited to submit a chapter for a collected volume looking at new and emerging methods for building inclusive, ethical cultures in STEM to be published by Springer. Findings from this project have also been shared in academic journal articles, conferences, and webinars.

## **Leadership**

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## Recipient Organization

Center for the Study of Ethics in the Professions, Illinois Institute of Technology

## Start and End Date

Fall 2016 - Fall 2021

## Contact Information

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## Publications, Presentations, and Other Products

Laas, Kelly, Stephanie Taylor, Christine Z. Miller, Eric M. Brey & Elisabeth Hildt (2021). "Views on ethical issues in research labs: A university-wide survey." Accountability in Research, DOI: [10.1080/08989621.2021.1910503](https://doi.org/10.1080/08989621.2021.1910503)

Laas, Kelly, Christine Miller, Eric Brey, Elisabeth Hildt and Stephanie Taylor. (2021) "[Infusing Ethics in Research Groups: A bottom-up, context-specific approach.](#)" Advances in Engineering Education. 8 (3).

Hildt, Elisabeth, Kelly Laas, Christine Miller, Stephanie Taylor and Eric Brey. (2019). "Empowering Graduate Students to Address Ethics in Research Environment." Cambridge Quarterly of HealthCare Ethics. 28(3): 542-550. DOI: [10.1017/S096318011900046X](https://doi.org/10.1017/S096318011900046X)

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## **Resource Type**

Projects

## **Parent Collection**

STEM Ethics Projects (2017-Present)

## **Topics**

Mentors and Trainees

Teaching Ethics

Pedagogical Approaches

## **Discipline(s)**

Teaching Ethics in STEM

## **Publisher**

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