



Arizona State University's Institutional Training Plan for the Responsible Conduct of Research

Developed by
Knowledge Enterprise Office of Research
Integrity and Assurance and
The ASU RCR Faculty Advisory Group
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Background

The responsible and ethical conduct of research (RCR) is critical for excellence, as well as public trust, in academic research. Consequently, education in RCR is considered essential in the preparation of future scientists and engineers. Section 7009 of the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act (42 USC 1862o–1), as amended, requires that “each institution that applies for financial assistance from the (National Science) Foundation for science and engineering research or education describe in its grant proposal a plan to provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduate students, graduate students, postdoctoral researchers, faculty, and other senior personnel supported by the proposed research project. Such training must include mentor training and mentorship.” ([NSF PPAG 23-1](#) January 31, 2023; Section IX.B.1)

NOTE: The requirement specified in Section 7009 of the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act (42 USC 1862o–1), as amended, to have a plan to provide appropriate training and oversight in the responsible and ethical conduct of research to faculty and other senior personnel who will be supported by NSF to conduct research, will go into effect for new proposals submitted or due on or after July 31, 2023.

In responding to this requirement, NSF Proposal & Award Policies and Procedures Guide (PAPPG) 23-1 dated January 31, 2023, requires that institutions must certify, at the time of proposal submission the institution has a plan to provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduate students, graduate students, postdoctoral researchers, and faculty and other senior personnel who are supported by NSF-funded projects.

It should be noted that other federal agencies, e.g. National Institute of Health (NIH) in [NOT-OD-022-055 FY 2022 Updated Guidance: Requirement for Instruction in the Responsible Conduct of Research](#) have guidance on RCR training. This institutional plan is based on the NSF RCR requirements and is intended to address RCR training as required by the NIH and other federal agencies as applicable.

Purpose

The purpose of this document is to outline the Arizona State University (ASU) plan for implementing NSF’s requirements to provide Responsible and Ethical Conduct of Research (RCR) training to personnel conducting research under ASU sponsored research projects.

ASU Policy for the Responsible Conduct of Research

RCR is a widely accepted set of ethical and professional standards for conducting research. ASU is committed to maintaining the integrity fundamental to research activities through the responsible and ethical conduct of its faculty, staff, and students.

ASU promotes excellence in research and supports scholars from all fields. ASU is committed to the highest quality education for all students and scholars, and RCR instruction is essential to producing the best scientists and researchers for the future. To further this commitment, ASU will implement an institutional plan for RCR training so that required personnel conducting research supported by sponsored research projects can benefit from RCR training. In addition, the training requirement will apply to all fields of research, not exclusively the physical and natural sciences and engineering.

Institutional Responsibilities

According to [NSF PAPPG 23-1 Chapter IX.B.2](#) :

- a. *An institution must have a plan in place to provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduate students, graduate students, postdoctoral researchers, faculty, and other senior personnel who will be supported by NSF to conduct research. As noted in [Chapter II.D.1.d\(iv\)](#), an institutional certification to this effect is required for each proposal.*
- b. *NSF's RECR requirement applies to the breadth of research disciplines that the Foundation funds. The training provided should be effective and must be appropriately tailored to the specific needs and circumstances at each institution. Accordingly, it is the responsibility of each institution to determine the content, focus and the delivery method for the RECR training. Such content, however, must include mentor training and mentorship as noted in Section B.1 above. While training plans are not required to be included in proposals submitted to NSF, institutions are advised that they are subject to review, upon request.*
- c. *An institution must designate one or more persons to oversee compliance with the RECR training requirement.*
- d. *Institutions are responsible for verifying that undergraduate students, graduate students, postdoctoral researchers, faculty, and other senior personnel supported by NSF to conduct research have received training in the responsible and ethical conduct of research.*

Institutional RCR Training Plan

ASU will meet the NSF requirements for RCR training by requiring researchers supported under sponsored research projects; students (undergraduate and graduate), postdoctoral researchers, and faculty and other senior personnel (on awards resulting from new proposals submitted to NSF on or due after July 31, 2023, regardless of sponsor, to receive and participate in RCR training. "Supported" in the context of this plan means salary support received from external sponsors. However, the time spent by an ASU student or postdoctoral researcher for RCR training may not be charged directly to an award. ASU believes that RCR training can be implemented through many educational avenues and will use a three-phase approach that meets the needs of the researcher based on the career stage of the individual.

Phase I: All undergraduate students, graduate students, and postdoctoral researchers,

and faculty and other senior personnel (on awards resulting from new proposals submitted to NSF on or due after July 31, 2023), will participate and complete the Collaborative Institutional Training Initiative (CITI) online training (www.citiprogram.org) for RCR based upon their field of research and career level. This training will provide a foundational basis for RCR by encompassing its topical elements. This training must be completed within 60-days after award activation for undergraduate students, graduate students, and postdoctoral researchers, and at NSF award activation for Faculty and Sr Personnel and is required every 4 years. Faculty and other senior personnel (on awards resulting from new proposals submitted to NSF on or due after July 31, 2023) will complete the specific CITI online RCR training course for Faculty and Sr Personnel.

Phase II: Graduate students and postdoctoral researchers will be provided opportunities throughout the year to expand their RCR training through interactive events and activities (i.e., workshops, symposia, or classes). Postdoctoral researchers will be required to attend at least 1 interactive event within their first year of employment. Phase II participation will be mandatory for postdoctoral researchers and at the Principal Investigator (PI) discretion for undergraduates and graduate students. Faculty and senior personnel are highly encouraged to attend the Phase II workshop events.

Workshops are available during the academic spring and fall semesters. Postdoctoral researchers whose deadline completion falls outside the spring and fall academic scheduling may request a waiver for the in-person requirement. This allows the individual to watch a video of one of the workshops and provide a written summary (approximately 1 page) of lessons learned to earn credit for attending the session. Requests for a waiver for Postdoctoral researchers must be co-signed by the requestor's principal investigator and must be submitted to the RCR Coordinator or Assistant Director in the Office of Research Integrity and Assurance for review and approval. The request for waiver should include a description of why attending a workshop was not possible. Other requests for waiver will be considered by ORIA on a case-by-case basis.

Phase III: All researchers (students (undergraduate and graduate)) and postdoctoral researchers) on sponsored research projects will have the opportunity to continue their education in RCR topics specific to their research setting. As part of ongoing educational activities, PIs are encouraged to hold interactive discussions during laboratory meetings with students and postdoctoral researchers. The Office of Research Integrity and Assurance will make continuing education resources available. The goal of Phase III is to bring RCR concepts into the daily research routine.

The Office of Research Integrity and Assurance (ORIA) is designated as the unit responsible for overseeing institutional compliance with the RCR educational requirements in this plan. ORIA is also responsible for:

- Monitoring training activities.
- Verifying that required personnel have completed Phase I and Phase II training per this Plan. PIs are encouraged to provide RCR mentoring in the research setting and are

responsible for the records of training activities they provide.

- Monitoring completion of the required training activities and maintaining documentation for all undergraduate student, graduate student, postdoctoral employees, and faculty and other senior personnel (for awards resulting from NSF proposals submitted on or due after July 31, 2023). Verification of training may not be available for all phases of training for short term employees (those student and postdoctoral researchers whose appointment is less than 12 months).
- Developing assessment tools to evaluate the implementation plan and effectiveness of RCR training and educational initiatives; and
- Building collaborations with faculty members and units that promote RCR core competencies.

The Office of Research and Sponsored Projects Administration (ORSPA) is the Authorized Organizational Representative (AOR) for certifying that the Institutional RCR Training Plan is in place at the time of proposal submission.

The Plan's goals will be to foster and integrate RCR education at the highest standard of ethical and professional conduct for the culturally diverse and transdisciplinary research community at ASU. The plan is intended to provide flexibility in content and delivery and to address the varying needs of different disciplines and career stages. This plan is a living document and as such the Institutional RCR Plan will be regularly assessed and monitored as educational outcomes are evaluated and best practices are increasingly developed to advance RCR education at ASU.

ASU will flow down RCR training requirements to all subaward recipients on NSF awards.

RCR Content Areas

Subject Matter: Developments in the conduct of research and a growing understanding of the impact of the broader research environment have led to a recognition that additional topics merit inclusion in discussions of the responsible conduct of research. Training topics include the following:

- a. conflict of interest – personal, professional, and financial – and conflict of commitment, in allocating time, effort, or other research resources
- b. policies regarding human subjects, live vertebrate animal subjects in research, and safe laboratory practices
- c. mentor/mentee responsibilities and relationships
- d. safe research environments (e.g., those that promote inclusion and are free of sexual, racial, ethnic, disability and other forms of discriminatory harassment)
- e. collaborative research, including collaborations with industry and investigators and institutions in other countries
- f. peer review, including the responsibility for maintaining confidentiality and security in peer review
- g. data acquisition and analysis; laboratory tools (e.g., tools for analyzing data and creating or working with digital images); recordkeeping practices, including methods such as

- electronic laboratory notebooks
- h. secure and ethical data use; data confidentiality, management, sharing, and ownership
- i. research misconduct and policies for handling misconduct
- j. responsible authorship and publication
- k. the scientist as a responsible member of society, contemporary ethical issues in biomedical research, and the environmental and societal impacts of scientific research

Format of Instruction

Discussion-based instruction in the responsible conduct of research for Phase II training is expected to remain a key feature of RCR training and to include substantive face-to-face interaction among participants. Recognizing that advances in video conferencing now allow for effective “face-to-face” discussions to occur electronically, video conferencing is included as an option for ASU RCR training, with the intent that it is utilized in a way that fosters discussion, active learning, engagement, and interaction among the participants. Video conferencing would not be employed as the sole means for meeting the requirement for RCR instruction, except in the circumstances described in [NOT-OD-10-019](#), such as short-term research training and research education programs.

Frequency and Timing

Existing policy and guidance call for RCR instruction to be undertaken at least once during each career stage, and at a frequency of no less than once every four years. This institutional plan aligns with this policy and guidance.

RCR Resources Available

An abundance of RCR resources exists and many professional societies have adopted policies or best practices that might be usefully considered. In addition, research is illuminating existing practices surrounding ethical issues and providing an evaluation of pedagogical innovations in ethics education.

To meet the need for RCR resources, NSF has funded two beta sites to begin to provide an interactive community online resource on ethics education in science and engineering.

Online Ethics Center

<http://www.onlineethics.org/>

Ethics in Science and Engineering National Clearing House

<http://www.umass.edu/sts/digitallibrary/>

ASU will develop and provide RCR resources to its research community including case studies, workshops, seminars, lectures, and videos. ORIA will develop web-based resources for use in Phase III continuing education opportunities.

Many opportunities also exist within colleges, departments, centers, and laboratories for faculty to promote RCR education through activities that already routinely occur in a research or classroom setting:

- Ethics coursework
- Research methods courses
- Informal or formal meetings
- Departmental meetings
- Training sessions offered by the IRB, IACUC, and Institutional Biosafety Committee
- Experiential research programs for graduate and undergraduate students
- Laboratory discussions with research participants
- Orientation sessions for postdoctoral fellows, graduate students, and graduate assistants
- Departmental activities such as dissertation groups, seminar series, and discussion groups
- Institution-wide lecture or discussion series
- Professional development programming offered by the graduate school
- Activities sponsored by graduate student and postdoctoral organizations
- Feature articles on RCR issues in the campus newspaper or departmental newsletter
- Collaboration with graduate program coordinators to promote RCR training

RCR Program Assessment

The ASU RCR training program will be continually evaluated to ensure we are meeting the stated goals of this plan. The goals are intended to be practically focused on skill development coupled with dissemination of shared knowledge and experience.

Additional goals of the program are to:

- Serve as a catalyst for questioning decisions, practices, and processes related to the responsible conduct of research with the objective of strengthening individual and group decisions.
- Promoting skill development by:
- Recognizing and defining the ethical issues involved in research and educational training activities
 - Understanding stakeholder perspectives
 - Identifying conflicting ethical values
 - Revising options, plans, and actions based on lessons learned and best practices of stakeholders and of colleague institutions
 - Engaging in ongoing collaborations with stakeholders to strengthen outreach and increase training capabilities

ORIA will regularly review the status of the Institutional RCR Training Plan, seek input from faculty and leadership as needed and report on the status of the Plan to leadership as needed. Evaluations and recommendations will be submitted by ORIA to the Vice President for Research, Office of Knowledge Enterprise, for review.

Acknowledgement

We thank our colleagues in Research Administration and federal regulators across the nation for their continued support as the requirements for the RCR program have evolved over the past several decades.