

YALE UNIVERSITY

**National Science Foundation
Responsible Conduct of Research
Training Plan
for
Undergraduate Students, Graduate
Students and Postdoctoral Researchers**

I. Introduction

The 2007 America COMPETES Act (*America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education and Science*) directs the National Science Foundation (NSF) to require all grantees at the time of submission of a proposal to certify that they have a plan to provide appropriate instruction and oversight in the responsible and ethical conduct of research for undergraduate students, graduate students, and postdoctoral researchers. In response to this requirement, NSF published a revision to its *NSF Proposal & Award Policies and Procedures* mandating an effective date of January 4, 2010.

II. Purpose

The purpose of this document is to outline Yale University's plan for the implementation of the NSF's requirement for instruction in the responsible conduct of research (RCR).

Representatives from the Graduate School of Arts and Sciences, Yale College, the Office of Postdoctoral Affairs, the Provost's Office, Office of Research Compliance and Education, and Organizational Development and Learning Center participated in the development of this Plan.

III. General Standards

Yale faculty are expected to conduct their scholarly research and publish the results of that research consistent with the highest standards of ethical conduct, truth, and accuracy. It is incumbent upon the faculty to instill those same standards in their students and postdoctoral researchers.

Fundamental to a meaningful RCR program is program content. The basis for Yale's RCR programs is the core elements as identified by the NIH's Office of Research Integrity (see below). Instruction in the content areas related to human subject's research, research involving animals, and safe laboratory practices is conducted and verified in accordance with federal regulatory requirements and as specified by Institutional policies. Additional content is tailored to the needs of individual Schools and disciplines.

Core content may include the following areas:

1. Academic Fraud and Research Misconduct
2. Conflict of Interest and Conflict of Commitment
3. Human Subjects Protections
4. Use and Care of Animals
5. Data Acquisition, Management, Sharing and Ownership
6. Publication Policies and Responsible Authorship
7. Mentoring and Trainee Responsibilities
8. Peer Review
9. Collaborative Science

Undergraduate and graduate students and postdoctoral researchers compensated from NSF awards are expected to complete instruction in RCR. The mode of instruction varies to afford maximum flexibility in meeting the needs of the trainee.

IV. The Program

A. NSF RCR Training Plan for Undergraduates

Identification of Undergraduate Students

- On a monthly basis, the Office of Research Enterprise Operations (OREO) generates a cumulative report that lists the undergraduate students charged to NSF awards to date for the fiscal year. The report is automatically emailed to the process owners for undergraduate students.
- As they are identified in the monthly report, students are contacted by the Dean's Office for Science and Education and informed that they must participate in RCR training.

Training

- Training, taught by a member of the Dean's staff, typically takes place in small group sessions throughout the fall, spring and summer terms. If the need arises, one on one instruction is provided. During the training session, the instructors and students work through questions and hypothetical scenarios covering the core content areas described in Section III with the exception of human subjects protection and the use and care of animals. If a student is involved in either of these activities, s/he must take mandatory training through his/her research group required by Yale policy.
- Training length: 90 minute sessions
- Training materials are located in the Yale College Science and Quantitative Reasoning Center located at 1 Prospect Street, Lower level.

Documenting Training

- To show evidence of training, each student is required to print and sign their name and NetID and date their signature on a sign in sheet on the day of their RCR training.
- Sign in sheets reside in the Yale College Science and Quantitative Reasoning Center located at 1 Prospect Street, Lower level.
- Student participation is reconciled by the Process Owners with the report received from OREO.

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B. RCR Training Plan for Graduate Students
Identification of Graduate Students

- The Graduate School of Arts and Sciences (GSAS) requires the inclusion of ethics and RCR training in the curriculum of all graduate students.
- Monthly, the Office of Research Enterprise Operations (OREO) generates a cumulative report that lists the graduate students charged to NSF awards to date for the fiscal year. The report is automatically emailed to the process owners for graduate students. These reports are checked against student lists generated by the Graduate School to ensure compliance.

Training

- The Graduate School of Arts and Sciences (GSAS)
 - All entering graduate students are expected to attend training sessions offered during fall orientation on professional ethics and sexual harassment. The orientation sessions are presented by GSAS staff as lectures and small group discussions groups. Make-up sessions are conducted during the first semester for those unable to attend the initial offering.
 - During the first term, GSAS students are advised by the registrar to complete on-line learning modules in professional ethics and sexual harassment prior to their registering for a second term. Completion of this is tracked electronically by the University Registrar's Office.
- Science and Engineering
 - Science and engineering students are required to complete RCR training within their given discipline. Graduate programs designate a faculty member as the Director of Graduate Studies who is responsible for the administration and curriculum development of their graduate program including RCR as outlined in section III of this Plan.
 - GSAS students are advised that they must successfully complete, by the end of their first year, the RCR course designated by their department or School. Students who have conflicts and may be required to complete CITI RCR modules via Yale's Training Management System (TMS) as an interim step in their training.
 - Departmental RCR courses are offered once per year.
 - Departmental RCR courses run for a semester, one or two days per week depending on the discipline, usually in 60 minutes sessions.

- RCR course content resides within the organizing department in the office of the course director and is posted in the Bulletin of Yale University, an annual publication providing basic academic information for Yale College, the Graduate School of Arts and Sciences, the twelve professional schools, and other University institutes or centers.
- Students are not permitted to register for a third term without having completed their required RCR course.
- Humanities and Social Sciences
 - Graduate students in the Humanities and Social Sciences compensated on NSF awards are identified, as noted above, and directed to the CITI RCR modules via Yale's Training Management System (TMS) with a requirement of completion within their first year. In addition, students are encouraged to discuss RCR with their faculty advisor.

Documenting Training

- The GSAS maintains records of student attendance at professional ethics and sexual harassment training sessions offered during orientation and make-up sessions.
- Students in the GSAS register for semester-long RCR courses online through the University Registrar's Office. Completed RCR courses are posted by the registrar on student transcripts. Graduate students in the sciences are not permitted to register for a third term in the School without having completed an RCR course.
- Completion of the RCR training for students in the Humanities and Social Sciences is recorded by the University registrar.
- The Process Owners for the NSF RCR Training Plan for Graduate Students reconcile transcripts at the end of each semester with the monthly OREO report noted above.

Process Owners:

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C. NSF RCR Training Plan for Postdoctoral Appointees

Identification of Postdoctoral Appointees

- On a monthly basis, the Office of Research Enterprise Operations (OREO) generates a cumulative report that lists the postdoctoral associates (“postdocs”) charged to NSF awards to date for the fiscal year. The report is automatically emailed the Office for Postdoctoral Affairs.
- Postdocs are contacted by a member of the staff in the Office of Postdoctoral Affairs and informed that they must participate in RCR training.

Training

- Postdocs on NSF awards are directed to complete CITI RCR modules.
- Postdocs may instead choose to participate in an in-person RCR course offered each May. The course runs for 9 weeks and is organized by the Office for Postdoctoral Affairs. Course content includes the topics outlined in Part III of this Plan as well as an additional session on sexual misconduct.
- Postdocs transferring to Yale from another institution must submit verification to the Office of Postdoctoral Affairs that they have taken RCR training at their previous institution as a postdoc. Completion of the CITI modules is considered equivalent training.

Documenting Training

- Completion of the CITI course and/or the in-person course is tracked through Yale’s Training Management System (TMS).
- The Process Owner for NSF RCR Training Plan for Postdoctoral Appointees is responsible for reconciling quarterly against the list of names provided by OREO in their cumulative report.

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Revised August 14, 2017