Analysis of University Policies for Complying with NSF RCR Instruction

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1. Background and method

In September of 2011, I collected policies from 27 universities, including the 14 CIC institutions[2] and a geographically diverse selection of 13 additional RU/VH (research university, very high) universities as listed by the Carnegie Foundation for the Advancement of Teaching.

In November-December 2012 I analyzed all of the policies using a data sheet for coding each policy (by hand). I revised the datasheet twice, after I had coded the first 5 and again after I had coded a total of 10 policies. I then constructed an Access database for data entry, which led to further refinement of the categories. When all of the data was entered, I exported the data to an Excel spreadsheet, which I used for my analysis. The process of analysis also led to minor refinements, all of which I checked against the policies themselves.

This report and supporting information can be found in an Ethics CORE resource at https://nationalethicscenter.org/resources/948. Supporting resources include:

- The Access database and Excel spreadsheet mentioned above.
- A list of the sampled universities and a map showing their locations.
- A single PDF file with a list of the policies providing (a) links to the original URLs whence I collected the policies and (b) links to the collected policies embedded in the file.
- A preliminary analysis of 4 of the policies completed on September 8, 2011.

Note that I may have missed some sections of some policies, and some of the policies may be silent on procedures that are nevertheless in place. For this reason, I do not assume or assert that any of the policies *as actually enacted* are deficient, and I do not specify the correlation between policies and universities in this report. The interested

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reader can find this information in the raw data sets. The purpose of this report is to give a limited sense of how universities responded to the NSF mandate soon after it was announced.

The next sections present the data with observations. In section 11, I comment on the elements I would suggest for a model[3] policy. Section 12 is an index of the data tables.

2.   Requirement by funding source and career stage

Most policies (16) are specific to NSF only; 8 others include NIH as well; 2 do not specify. As shown in the table, 3 policies cast a wider net than required by NSF.

Table 1. Who is required to take NSF RCR training?

Description	All	CIC	Comments
NSF-funded only	16	9	Two policies go beyond the NSF requirements: (1) "**The Principal Investigator**, all undergraduate and graduate students and postdoctoral scholars, **and all other academic and staff appointees** who are supported by NSF research grants and subawards will be required to take the course." (2) "All undergraduate researchers, graduate students and post-docs **in academic units eligible for NSF funding** are required to complete this new training."
NIH-funded also	8	3	
Other	1	1	All graduate students and postdocs **regardless of funding** (excluding those who have completed NIH RCR training)
Not specified	2	1	

Almost all policies (25 or 26) specify that undergraduate students, graduate students, and postdoctoral researchers are covered; very few mention faculty or staff.

Table 2. At what career stage is NSF RCR training required?

Stage	All	CIC
Undergraduate	25	13
Graduate	26	14
Postdoc	26	14
Early career faculty	2	1
Faculty	1	0
Staff	1	0

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[3] "Model" in the sense of "plan or sketch," not in the sense of "ideal."

3. Deadlines for completion of training

About 1/3 of the policies do not specify when the training has to begin or to be completed. Of the roughly 2/3 that do specify, the level of detail is variable, but the stated requirements generally seem quite reasonable.

Table 3. When is the training to be taken/completed?

Description	All	CIC
Within ___ days of appointment/start of project[4]		
30 days	2	1
60 days	4	3
90 days	4	2
1 year	2	1
Total	*12*	*6*
As soon as possible	1	0
At each new phase of career	1	1
Before being hired	1	1
During the grant period	1	0
Not specified	11	4

4. Uniformity of training programs across universities

Almost all policies apply uniformly across the university; about 1/3 allow or require units to customize the general training or provide their own training.

Table 4. Is training uniform or do units have latitude to customize?

Description	All	CIC
Applies to all	19	8
Units have latitude	8	6

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[4] Number of days are not expressed exactly this way in every plan; for example, some plans specify "1 month" or "1 quarter", and some have different periods based on stage of career.

Descriptions of the customizations are quoted or paraphrased in Table 5.[5]

Table 5. Allowed training customizations

All take CITI; graduate programs and postdoc mentors determine "the specific method" to satisfy required "additional discussion-based RCR education"
Units must submit a plan for undergraduates and postdocs to get similar training to graduate students
CITI or similar course if offered
"PIs and their academic units will be responsible to identify current courses and activities that meet the requirement, and encourage the development of new courses and activities."
"Format: In-person training is the best format to facilitate discussion and in-depth consideration of these topics, However, online training is the more realistic option, given existing resources, Any online training must incorporate some sort of interactive element, such as synchronous or asynchronous online chats or discussions, or the ability to assess understanding." "It is ultimately the responsibility of the Principal Investigator of an NSF-sponsored project to assure compliance with the RCR requirement for all undergraduates, graduate students, and postdoctoral researchers working on his/her project. Division plans have been communicated to the faculty and most have been posted to their websites."
Units must describe training to administration
CITI and 2 courses are approved; schools/departments can offer other trainings, to be reviewed by the Office of Research Compliance and Training
"Training may be accomplished through a menu of options, but must include a didactic component introducing principles, terms and policies; a test of basic information; and an experiential component including facilitated discussion. For undergraduate students, the didactic component and test constitute sufficient formal training."

5. Mode of training and required topics

Virtually all of the policies (26 of 27) depend solely or largely on online training.

Table 6. Is training provided online, face-to-face, or both?

Mode	All	CIC
Online	12	5
Face-to-face only	1	1
Both	14	8

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[5] This and a few other clusters of data are presented as tables for ease of reference; see the list of tables on page 7.

The CITI online course is by far the most popular platform for online instruction, followed by training created for and by the university.

Table 7. Online source

Source	All	CIC
CITI	20	9
CITI **and** *CMDITR[6]*	*1*	*0*
CMDITR only	0	0
Home-made only	6	4
No online	1	1

I coded topics based on NIH list of topics that are included in "most acceptable plans." Not all policies specify topics.

Table 8. Specified topics

NIH topics	All	CIC	NIH topics	All	CIC
Conflicts of interest	11	3	Peer review	8	3
Human subjects	8	2	Data	11	4
Animal subjects	8	2	Misconduct	13	5
Lab safety	3	1	Authorship	13	6
Mentoring	9	2	Social responsibility	1	0
Collaboration	7	2			

A few policies make it clear that some topics are required only for trainees for whom the topics apply to their own research activities.

Table 9. Topics required only as applicable

NIH topics	All	CIC
Human subjects	3	2
Animal subjects	4	2
Lab safety	1	1

In the data field **Topic-Other** I consolidated a hodgepodge of information that could be of interest but does not yield easily to useful categorization for comparative analysis, such as course names. This information can be found in the raw data sets.

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[6] CMDITR for undergraduates only.

6. Characteristics of face-to-face training

Face-to-face training plays such a small part in these policies that there is little to report and the tables require no additional comment.

Table 10. Who provides face-to-face training?

Source	All	CIC
Unit	6	3
Graduate school	3	3
Sponsored Research or Compliance Office	2	1

Table 11. Credit for face-to-face course

Credit	All	CIC
One-quarter	1	0
1 to 3 credits	1	0

Table 12. How are face-to-face courses graded?

Credit	All	CIC
Graded	1 (B or better)	0
Pass-no pass	1	0

Table 13. Face-to-face training is evaluated based on …

Aspect	All	CIC
Attendance	5	4
Participation	3	2
More	3	1

7. Time commitment

About 1/3 of the policies give information (usually an estimate) of the time required to complete the training, ranging from 1 hour to 15 or 16 hours.

Table 14. Approximate time commitment

Type(s)	Amount	All	CIC
Custom online only	1 hour	1	1
Online and/or face-to-face	At least 2 hours	1	1
CITI	unspecified for required modules 1 to 4 hours for electives	1	0
CITI	1.5 to 3 hours	1	1
Custom online only	2 to 2.5 hours	1	0
CITI Face-to-face	3 to 3.5 hours 4.5 hours	1	0
Face-to-face	10 to 16 hours	1	1
Face-to-face	12 hours	1	1

Type(s)	Amount	All	CIC
Face-to-face	15 hours	1	0
CITI Face-to-face	unspecified 5 hours	1	1
Custom online **or** face-to-face (same time estimate)	Equivalent of a full semester	1	0

8. Evaluation

Most policies include evaluation of trainee learning. A few also indicate that teachers and/or the entire program is evaluated at regular intervals.

Table 15. Which aspects are evaluated?

Aspect	All	CIC
Trainee learning	20	11
Teachers	2	1
Program	3	1

In 8 policies, an 80% score on quizzes is required, but another 12 say only that the CITI training must be completed. It seems likely that quizzes are *de facto* required by some of the latter institutions, but I find the ambiguity in wording suggestive.[7]

Table 16. CITI training is evaluated based on ...

Aspect	All	CIC
80%	8	7
Completion	12	4

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[7] Most, but not all, CITI modules include quizzes, but "The required per-module and average passing score can be set at any level the subscriber institution wishes (the default is usually 70 and 80 percent, respectively)" ("Using CITI Program Content: An Introduction" p. 3; http://www.citiprogram.org/citidocuments/forms/Using%20CITI%20Program%20Content%20Introduction.pdf, October 12, 2012). This implies that subscribing universities have the option of setting the passing grade at zero.

9. Certification and record keeping

In most cases, certification of completion and/or passing the required training is performed by CITI automatically and also by the university. A few policies specify that units and/or PIs must also certify training. The same is true of record keeping.

Table 17. Trainees are certified by …

Aspect	All	CIC
Online (automatic)	21	10
University	21	10
Unit	5	2
PI	7	4

Table 18. Records are kept by …

Aspect	All	CIC
Online (automatic)	21	10
University	21	10
Unit	5	2
PI	8	5

10. Non-compliance and additional PI responsibilities

I found two categories interesting, in part because they appear in so few policies.

Only 3 policies mention consequences for non-compliance for trainees; 1 also mentions consequences for non-compliant PIs.
In addition to the responsibilities of PIs mentioned in section 9, 7 specify that PIs are responsible to ensure trainee compliance, often by alerting trainees about the requirement.

I did not find in any policy a specific requirement that PIs must teach RCR.

Table 19. Consequences for non-compliance are specified for …

Role	All	CIC
PI	1	1
Trainee	3	3

Table 20. PI is responsible for …

Description	All	CIC
Ensuring trainee compliance	7	4
Teaching RCR	0	0

11. Final comments and model policy

In my opinion, with few exceptions the samples universities designed policies to impose the smallest possible burdensome and show little or no interest in teaching, learning, PI responsibility for inculcating good research practices, or research behavior in general.

This minimalism is no doubt fostered in part by the logistics required to meet the NSF requirement that the institution keep records on training. Using CITI is no doubt the easiest and least expensive way to do so. Ironically, some of the policies that allow or require units to take greater responsibility for RCR training may simultaneously encourage better involvement by researchers (which is not accomplished by using CITI or administration-sponsored workshops) and worse compliance with the NSF mandate.

Many of the elements for a model policy offered below can be found in one or (usually) more of the samples policies.

Table 21. Elements of a model NSF policy

1. What role will NSF PIs play in developing and enacting the policy?
2. The policy must apply to all undergraduate students, graduate students, and postdoctoral researchers who receive support from salary and/or stipends to conduct research on NSF grants. What other personnel (if any) are covered by the policy?
3. What is the deadline (in days, weeks, or months) for beginning and/or completing the required RCR education relative to the learner's date of appointment to the project? It might be necessary to have different deadlines based on the length of the project (a few months, a full year) or the nature of the training (a one-day workshop, a semester-long course).
4. Who will ensure that learners will complete RCR education?
5. Who will keep records on compliance by PIs and learners?
6. What will be the consequences for non-compliance for units, PIs, and covered personnel?
7. What topics will be covered?
8. What topics will be required for all learners (authorship, data) and which will be required only as applicable (human subjects, animal subjects, lab safety)?
9. For each topic:
    a. What are the educational objectives?
    b. What are the expected educational outcomes?
10. How will learner outcomes be assessed (quizzes, tests, writing assignments, portfolios)?
11. What activities and exercises will be required (reading, writing, discussion)?
12. What is the expected time commitment (90 minutes per workshop, one semester)?
13. What will be the mode (online, face-to-face, both) and source (CITI, Sponsored Research, Graduate School, departments) of RCR education?
    a. If individual units (departments, labs, centers) provide their own RCR education, what minimal requirements will the institution require? How will unit programs be approved?
14. Will RCR instruction for students be for credit? Will it be graded, pass/fail?
15. How will the quality of the program (courses, workshops, teachers, online training) be evaluated, and at what intervals?
16. How will the impact of the RCR education program on the unit and institution be evaluated?
17. How will the program be sustained and improved over time?

12. List of tables

Each table name below is a hyperlink to the table.