

# Responsible Conduct of Research Training

**Implementation Plan for Graduate Students in the College of Engineering**  
(adapted from the MSU Responsible Conduct of Research Plans Template, Fall 2016)

## Background

Training in the Responsible Conduct of Research is essential in the preparation of future scholars and professionals. An understanding of the issues concerning the conduct of research in an increasingly complex world has become critical in successfully navigating the research landscape. To help prepare Michigan State University graduate students for their future scholarly work, a plan for providing the foundation of responsible conduct has been developed in coordination with the Graduate School, the Vice President for Research and Graduate Studies Office, and college associate deans for graduate education. The plan is predicated on the principles that a basic understanding of issues is necessary through didactic training and a periodic reinforcement of the principles through discussion. It is the belief that this plan will provide a foundation for all graduate students as well as others pursuing a career in research and will offer the basic information to meet most, if not all, federal agency granting requirements.

## College of Engineering Overview

All graduate students in the College of Engineering are required to complete Responsible Conduct of Research (RCR) training each calendar year, as specified in this document. Research is an integral component of graduate education, whether in the laboratory or in the classroom, thus all graduate students regardless of program (Master's Plan A, Master's Plan B, PhD) must complete annual RCR requirements as part of their degree program.

In the College of Engineering, RCR training is completed on a calendar-year basis (January 1 through December 31) and is reported by students as part of their required annual reports (due January 31). The following list summarizes the requirements for graduate students in different programs; the remainder of this document further details each type of training and methods for tracking completion of these requirements.

### Master's Degree "Plan B" (Non-Thesis) Requirements

1. Complete the "First Year Requirements"
2. Complete the "Discussion-Based Training"

### Master's Degree "Plan A" (Thesis) Requirements

1. Complete the "First Year Requirements"
2. Complete the "Second Year Requirements"
3. Complete the "Discussion-Based Training"

### Doctoral Degree Requirements

1. Complete the "First Year Requirements"
2. Complete the "Second Year Requirements"
3. Complete the "Discussion-Based Training"
4. Complete the "Annual Refresher Training"

## First-Year Requirements

All first-year graduate students must complete the following **four modules in CITI** ([citiprogram.org](http://citiprogram.org)):

1. Introduction to the Responsible Conduct of Research
2. Authorship
3. Plagiarism
4. Research Misconduct

This first-year training must be completed by December 31 of the calendar year in which students begin graduate studies. For example, graduate students beginning in Spring or Fall 2017 must complete these requirements by December 31, 2017; graduate students beginning in Spring or Fall 2018 must complete these requirements by December 31, 2018.

These four CITI modules represent the minimum RCR training requirement for first-year graduate students; students also have the option of completing additional discussion-based RCR training in year one if they wish (see Discussion-Based Training for more information).

## Second-Year Requirements

In their second-year, students enrolled in the Master's Plan A and PhD programs must complete **three online modules** from the following list of options:

1. CITI Collaborative Research
2. CITI Conflicts of Interest
3. CITI Data Management
4. CITI Financial Responsibility
5. CITI Mentoring
6. CITI Peer Review
7. IACUC Tutorial for Animal Care Training (<http://train.ORA.msu.edu>)
8. Human Research Protection/IRB Certification (<http://train.ORA.msu.edu>)
9. Rigor and Reproducibility Course (in production)

Departments may indicate in their graduate handbook(s) which specific module(s) students in the department must complete as part of the "Second-Year Requirements." If a department does not list specific "Second-Year Requirements" in its graduate handbook(s), then students in that department may complete any three modules from the list provided here. This second-year training must be completed by December 31 in the second year of students' graduate studies. For example, graduate students beginning in Spring or Fall 2017 must complete the second-year requirements by December 31, 2018; graduate students beginning in Spring or fall 2018 must complete the second-year requirements by December 31, 2019.

These three online modules represent the minimum RCR training requirement for second-year graduate students; students also have the option of completing additional discussion-based RCR training in year one if they wish (see Discussion-Based Training for more information).

## Discussion-Based Training

All graduate students must complete a minimum of 6 hours of discussion-based training prior to receiving their degrees. These hours may be completed at any point in the graduate program, including during the first two years. **Students are encouraged to complete this requirement early in their program** to avoid delays in graduation.

A variety of discussion-based training options are available at MSU, including RCR workshops offered by the Graduate School, some of the professional development seminars offered by the College of Engineering, and some of the research methods classes and other coursework offered within departments. Another option for completing discussion-based training is for students to participate in individual or group conversations about RCR with their research advisor(s). Departments may indicate in their graduate handbook(s) how students in the department are expected to meet the “Discussion-Based Training” requirements. If a department does not list specific “Discussion-Based Training” requirements in its graduate handbook(s), then students in that department may select any discussion-based RCR training that is approved by their research adviser.

## Annual Refresher Training

Starting on January 1 of their third year of graduate studies, all PhD students must complete 3 hours of RCR training each year. Students who choose to complete discussion-based training for these annual requirements **may** count this toward the 6 hours of discussion-based training that are required prior to graduation. Students may also opt to complete online modules **beyond** the 7 that are specified in years 1 and 2.

This annual refresher training must be completed between January 1 and December 31 each year, starting in the third year of the PhD student’s program.

## Student Reporting Responsibilities

Each graduate student is responsible for ensuring that he/she fulfills all RCR training requirements and accurately reports this training as part of his/her annual report.

All graduate students in the College of Engineering are required to use the RTTS system (<https://www.egr.msu.edu/secureresearchcourses/>) to record their own RCR training hours. Hours must be entered in RTTS in the calendar year in which they were completed, and the RTTS report must be included in students’ annual reports.

## College and Department Reporting Responsibilities

The College of Engineering will monitor whether or not students have completed the annual report submission process by the deadlines specified on the College’s website. Students who fail to meet these deadlines will have a hold placed on their student account until the annual report process has been completed.

**Each department is responsible for establishing processes for reviewing the contents of students’ annual reports and ensuring that students are fulfilling RCR requirements.** When graduate students submit their annual reports, the departments will track students’ progress

towards meeting the RCR requirements. Once specific requirements have been met, the department's Graduate Secretary or designee will update GradInfo as follows:

1. **Discussion-Based Training.** Once the student has completed all 6 hours, the department will note this in GradInfo as "Initial" training for Master's Plan A and PhD Students. For Master's Plan B students, the departments will keep track of discussion-based training in the students' file.
2. **Annual Refresher Training.** For PhD students in year 3 and beyond, the department will note in GradInfo as "Annual" training the 3 hours per year of required refresher training.

## Remediation Plan

For "Plan A" Master's students and for PhD students, departments should require that all RCR training be completed and reported **prior to scheduling the thesis or dissertation defense.**

For "Plan B" Master's students, all RCR requirements should be completed before the students apply for graduation.

Students who fail to complete all RCR requirements by these deadlines will be required to complete the missing training (ensuring that they meet the minimum number of hours of annual and discussion-based training for the length of their program). The departments, the College and MSU **will not certify students' degrees until all RCR training requirements are met.**

## Implementation Timeline

This RCR Training plan will take effect January 1, 2017, and will be required for all graduate students matriculating in the College of Engineering in Spring 2017 or later. Graduate students who matriculated in the College of Engineering prior to January 1, 2017, will have the option of completing either the previous training RCR requirements or the requirements specified here. The student's choice should be documented in his/her annual report.

## Attachments

For additional information, the MSU RCR Plans document from Fall 2016 is attached, along with the MSU-provided flowchart indicating which components of the RCR training will be tracked in SABA and in GradInfo (note that all Engineering graduate students are required to record all of their own RCR training within the RTTS system, and to include an RTTS report with their annual reports to the College).

## Appendix A: MSU Materials on RCR

### **MSU Responsible Conduct of Research Plans**

Training in the Responsible Conduct of Research is essential in the preparation of future scholars and professionals. An understanding of the issues concerning the conduct of research in an increasingly complex world has become critical in successfully navigating the research landscape. To help prepare Michigan State University graduate students for their future scholarly work, a plan for providing the foundation of responsible conduct has been developed in coordination with the Graduate School, the Vice President for Research and Graduate Studies Office, and college associate deans for graduate education. The plan is predicated on the principles that a basic understanding of issues is necessary through didactic training and a periodic reinforcement of the principles through discussion. It is the belief that this plan will provide a foundation for all graduate students as well as others pursuing a career in research and will offer the basic information to meet most, if not all, federal agency granting requirements.

The plan below represents the basic university plan. Each department/program or college will develop a plan that at a minimum incorporates these university-level requirements.

The Graduate School RCR Workshop series may be used to help fulfill both the annual refresher and discussion-based training requirements.

\*Students who are supported by NSF, NIH, or USDA grants may be required to complete additional specific training; they must meet the timeline and content requirements of training for that grant.

\*Students engaged in research involving human subjects or animal use must complete the Michigan State University training modules for those subjects before submitting IRB or IACUC approvals. These modules may be completed as part of the training requirements below, or in addition to them, depending on the department/program or college plan.

### **All graduate professional, master's and doctoral students**

#### **1) Year 1**

All new graduate and graduate professional students will complete 4 CITI online modules within the first year of enrollment in their program: *Completion of this requirement will be tracked in SABA*

- Introduction to the Responsible Conduct of Research
- Authorship
- Plagiarism
- Research Misconduct

#### **2) Discussion-Based Training**

All graduate and graduate professional students must complete a minimum of 6 hours of discussion-based training prior to receiving their degrees. These hours can be completed at any point in the graduate program, including during the first 2 years (e.g., as part of a course), or as part of the ongoing training requirement (for doctoral students). Specifics about the number of hours required, the content, and the timing of this training will be defined in the individual department/program or college plan. *For master's Plan A and PhD students completion of this requirement will be recorded by the department in GradInfo as "Initial" training.*

## **Master's plan A and doctoral students**

### **In addition to 1 and 2 above, master's plan A and doctoral students will complete:**

#### **3) Year 2**

Within the first 2 years of enrollment in their program, master's plan A and doctoral students will complete 3 additional MSU online training modules, to be selected from the following list. Specific requirements for course selection may be defined in the individual department/program or college plan. *Completion of this requirement will be tracked in SABA.*

- CITI Collaborative Research
- CITI Conflicts of Interest
- CITI Data Management
- CITI Financial Responsibility
- CITI Mentoring
- CITI Peer Review
- IACUC Tutorial for Animal Care Training (in <http://Train.ORA.msu.edu>)
- Human Research Protection/ IRB Certification (in <http://Train.ORA.msu.edu>)
- Rigor and Reproducibility Course (in production)

### **In addition to 1, 2 and 3 above, doctoral students will complete:**

#### **4) Annual Refresher Training**

Starting in year 3, all doctoral students must complete 3 hours of annual refresher training; this can include discussion-based training and online courses beyond the 7 required in basic training. Specifics about the number of hours required, the content, and the timing of this training will be defined in the individual department/program or college plan. *Completion of this requirement will be recorded by the department in GradInfo as "Annual" training.*

# RCR Minimum Plan requirements

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Tracked automatically in SABA =	
Tracked by department in GradInfo =	

## Master's plan B and grad professional

<p><b>CITI Modules Year 1</b></p> <ul style="list-style-type: none"> <li>• Introduction to the Responsible Conduct of Research</li> <li>• Authorship</li> <li>• Plagiarism</li> <li>• Research Misconduct</li> </ul>	6 hours discussion-based training (by completion of the degree)
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## Master's Plan A students

<p><b>CITI Modules Year 1</b></p> <ul style="list-style-type: none"> <li>• Introduction to the Responsible Conduct of Research</li> <li>• Authorship</li> <li>• Plagiarism</li> <li>• Research Misconduct</li> </ul>	6 hours discussion-based training (by completion of the degree)
<p><b>CITI Modules Year 2</b></p> <p>Complete 3 additional from specific list</p>	

## Doctoral students

<p><b>CITI Modules Year 1</b></p> <ul style="list-style-type: none"> <li>• Introduction to the Responsible Conduct of Research</li> <li>• Authorship</li> <li>• Plagiarism</li> <li>• Research Misconduct</li> </ul>	6 hours discussion-based training (by completion of the degree)
<p><b>CITI Modules Year 2</b></p> <p>Complete 3 additional from specific list</p>	
<p><b>Year 3 forward</b></p> <p>3 hours of annual refresher training</p>	

## Appendix B: RTTS Menu Options

### “Year 1” Requirements

- CITI Introduction to RCR (RCR-Basic) (ID: 17009)
- CITI Authorship (RCR-Basic) (ID: 16597)
- CITI Research Misconduct (RCR-Basic) (ID: 16604)
- CITI Plagiarism (RCR-Basic) (ID: 15156)

### “Year 2” Options

- CITI Collaborative Research (RCR-Basic) (ID: 16598)
- CITI Conflicts of Interest (RCR-Basic) (ID: 16599)
- CITI Data Management (RCR-Basic) (ID: 16600)
- CITI Financial Responsibility (RCR-Basic) (ID: 16601)
- CITI Mentoring (RCR-Basic) (ID: 16602)
- CITI Peer Review (RCR-Basic) (ID: 16603)
- ORA IACUC Tutorial for Animal Care Training (<http://train.ORA.msu.edu>)
- ORA Human Research Protection/IRB Certification (<http://train.ORA.msu.edu>)
- Rigor and Reproducibility Course (in production)

### Other Options

- CITI Environmental and Social Dimensions of Engineering Research (RCR) (ID: 12835)
- CITI Research Involving Human Subjects (RCR-Basic) (ID: 13566)
- CITI Using Animal Subjects in Research (RCR-Basic) (ID: 13301)
- PI Meeting
- College of Engineering RCR Orientation
- Other (requires that a description is provided in the notes)



## Appendix C: College of Engineering RCR Completion Flowchart

