

GRAD 5000 (1cr) Responsible Conduct of Research Fall 2024

Times: Wednesdays 5:10 PM – 6:10 PM Aug 28 – Dec 13, 2024 JSCBB A115 (in person)

Lead Instructor: **Mary Ann Allen**

The purpose of this course is to provide a comprehensive introduction to the ethical issues involved in conducting research. Many granting agencies, such as NIH, have this course as a requirement for trainees participating in research they fund. The class will be taught primarily through reading, lectures, and discussion groups. Each day, the class will begin with a lecture on a specific research issue, followed by a small group discussion on the topic led by faculty, or some other related activity. This class can be taken Pass/Fail or for a letter grade.

Grading Scale

- Each week there will be a short Quiz via Canvas before that week's class. This quiz will cover the reading and video material.
- Each week there will be a short Activity related to the homework material. This activity should be done after you have done the reading/videos for the week.
- Each class will have a lecture followed by a small group Discussion. During or after class (within 24 hours), you must submit 3 sentences to your Canvas small group discussion to prove you were present.
- You are required to turn in two half-page Interview Case Study Essays, each about a separate story. First, interview another researcher about one of the topics we cover in this course. Second, write a half-page story about what happened to the person you interviewed. This story should include no personal details.
- You do not need to email me if you miss class. You cannot miss classes and still receive NIH credit. Therefore you will need to make up missed coursework. Make-up work is only allowed for up to 3 classes.

	Number of assignments of this type	total percentage	percent per assigned
Attendance and Misc	~15-20	5%	NA
Quizzes	14	20%	1.4%
Activities	14	5%	0.7%
Discussions	14	60%	4.3%
Essays	2	10%	5.0%

Schedule of classes:

Session	Topic	Lecture by	NIH Subjects
Week 1	Intro to RCR and Data Acquisition / Management	Mary Allen	f, g, h
Week 2	Data Rigor and Stats	Mary Allen	g
Week 3	Data Reproducibility	Mary Allen	g, j
Week 4	Research Misconduct – A Guide	Thomas Heddleston	i
Week 5	Research Misconduct – An Example	Mary Allen	i
Week 6	Lab Safety	Sara Sawyer	b
Week 7	Conflict of Interest and Export Control	P. Myers & G. Steele	a, h
Week 8	Mentor / Trainee Issues	Ken Wright	c
Week 9	Intellectual Property	Brynmor Rees	e
Week 10	Protection of Human Subjects	Misty White	b
Week 11	Protection of Animal Subjects	Pei-San Tsai	b
Week 12	Authorship, Publication and Peer Review Issues	Stephanie Bryant	f, j
Week 13	Collaborative Research	Robin Dowell	e
Week 14	The Scientist in Society	Tom Cech	k
Week 15	Cringe Moments and Safe Research Environments	Kirsi Aulin	d

We cover the following topics, as recommended by the NIH in *The Requirement for Instruction in the Responsible Conduct of Research NOT-OD-22-055*.

- a) Conflict of interest – personal, professional, financial, and conflict of commitment, in allocating time, effort, or other research resources
- b) Policies regarding human subjects, live vertebrate animals in research, and safe laboratory practices
- c) Mentor/mentee responsibilities and relationships
- d) Safe research environments that are free of harassment
- e) Collaborative research, including 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; 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
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Advanced Responsible Conduct of Research Refresher (CCARS)

Times: 9am-5pm (Lunch break 12-1) January 9&10, 2025 JSCBB B115 (in person)

Instructor: Mary Ann Allen

Teaching Philosophy

The class is primarily discussion and project-based. As participants, you have all worked in the laboratory and taken previous RCR classes. Therefore, you know most of the material that NIH requires and should know it well enough to teach it. Therefore, in this RCR course, we will work together to create plans for RCR education and tools to help us become more rigorous and reproducible in our research.

Pre-class Assignments: HOMEWORK! Before class, Watch/Read:

1. Read: Conflict of Interest article from New York Times (pdf only)
2. Read: Reproducibility Crisis? Or Fake data?
3. Read: Even in our own backyard. (pdf)
4. Watch: What Constitutes Authorship?
5. Watch: Peer Review in 3 Minutes (Links to an external site.)
6. Watch: Science in service to the public good
7. Watch: Introduction to Experimental Design
8. Watch: Experimental Design Module 1a: Replication

Jan 9th, 9am-5pm

1. 6 Ws of CCARS: Who are you/Who am I, What are we going to learn in this class, Where is the class, When is this class, Why do we take RCR, How will we learn it
2. Quiz
3. All of RCR graduate education in 10 min, ensures we have covered all topics the NIH requires
4. 6 Ws of RCR. You are now in charge of Responsible conduct of research education for all of the people that the NIH funds. You have some decisions to make.
 - Who should take RCR? What should they learn? (NIH suggested topics **a-k** above) When should they take it? How often? Where should they learn? University class? Lab setting? Government agency? Why do they need RCR education? How should they learn it? What is the most effective way to teach RCR? Case studies, Videos, Discussion groups, Storytime?
5. Homework Overview
6. Practical ways to ensure responsible research

Jan 10th, 9-12 work on your own or in groups on the homework, 9am-12pm

Assignment 1: One page letter to a new graduate student of RCR on one of the following topics:

- What is a responsible researcher? What are the signs of a responsible researcher? What are the signs of research misconduct? How do you do good research? What should RCR teach? Is peer review done in the best way possible? How should science handle conflicts of interest? What is the best way to avoid authorship conflicts? Are there enough safeguards for students and post-docs or do mentors have too much power? What is the best way to train students to collect and back up data? Whose job is it to train them to do things like controls? How do you know when your internal bias is fooling you? What makes a responsible researcher? *Any other question can be used if approved by the instructor

Assignment 2: Pick 3 FAQs from any of the student questions. Answer them for a young graduate student.

Assignment 3: Choose a grey zone case study and explain how you would teach it and why you think it would be an effective way to teach it (250-500 words)

Jan 10th, 1-5pm

1. Discuss Assignments and questions you could not answer
2. Finish Practical ways to create a better research environment
3. "You never really know something until you teach it to someone else." The class will work together to prepare lectures on all topics required in an NIH RCR course.