RCRG 600 – An Introduction to Responsible Conduct of Research Syllabus
0 Credit Hours

Course Logistics

Course Director: Natalie Chernets, PhD

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Office Hours: Immediately after the class or virtually by appointment.

Course Time and Locations: The course is offered in two sections. Students will only register for one section.
Sessions:

1. Wednesdays, 12:00 pm-12:50 pm
   Dates: Jan 5, 12, 19, 26, Feb 2, 9, 16 (no lecture), 23, Mar 2, 9
   Location: NSBITT 125

2. Thursday, 12:00 pm-12:50 pm
   Dates: Jan 6, 13, 20, 27, Feb 3, 10, 17(no lecture), 24, Mar 3, 10
   Location: NSBITT 125

In Winter 21-22, the course will be offered in person on the University City Campus. In case of inclement weather or campus closures due to COVID 19, the lectures will be conducted remotely, synchronously through zoom.
Class zoom link for both sections is:

Meeting URL:	https://drexel.zoom.us/j/83654227130?pwd=VVJyZHNpeU90WTZISkFwKzgzQTBLdz09
Meeting ID:	836 5422 7130
Passcode:	165537

Please note that only authenticated users will be allowed to join the class zoom link. Therefore, you must be logged in to Drexel Connect before joining the class.

COURSE DESCRIPTION

This responsible conduct of research (RCR) course is a series of 50 min meetings that are designed to familiarize students with several issues related to the ethical conduct of scientific research. The students are advised of their societal responsibilities as members of the scientific research community. These include integrity, honesty, objectivity, and excellence. Priority will be given to those issues covered in the federal definition of "scientific misconduct" and the NIH's model curriculum on RCR. These issues include data fabrication, falsification, plagiarism; responsible authorship and publication; mentorship practices; conflicts of interest; research misconduct, data management. Also, broader ethical issues in scientific research will be touched upon, for example, as relates to changes in the way science is funded and structured and evolving social views regarding researchers' responsibilities to both humans and animals involved in research. The Course sessions and discussions are led by senior Drexel University academic and research leaders. The course uses lectures, current literature, large and small group discussions, required text readings, online resources and discussion, and CITI training.
This course is required for any 1st year Masters or Doctoral student at Drexel University, except for students in the College of medicine who must attend IDT 500 instead of RCRG600. This course is also available to senior undergraduate students or postdoctoral fellows.

COURSE STRUCTURE

The is a 0-credit, non-billable course that consists of nine lectures, as laid out below in the lecture schedule. All lectures will be 50 minutes in length. Course sections will meet once per week.

COURSE LEARNING OBJECTIVES

Adapted from Dubois and Dueker's 2009 article "Teaching and Assessing the Responsible Conduct of Research: A Delphi ConsensusPanel Report."

- To increase familiarity with US policies and regulations regarding scientific research, including federal definitions, their limitations, and their development
- To foster research integrity, professionalism, and the ability to identify ethical issues in scientific research
- To re/introduce resources at Drexel University and beyond for topics and issues related to the responsible conduct of research

COURSE CONTENT AND TEACHING METHODS

Course materials: Materials that will be available on Blackboard:

- PowerPoint slide presentations
- Required course readings
- Additional readings

Required text:

- **Scientific Integrity: Text and Cases in Responsible Conduct of Research**, 4th edition; F. L. Macrina, ASM Press, 2014. This ebook is available online through the library.
- **On Being A Scientist: A Guide to Responsible Conduct of Research**, 3rd edition; COSEPUP, National Academies Press, 2009 (http://www.nap.edu/catalog.php?record_id=12192 to download a free and legal PDF of the book). This ebook is available online through the library.

Other Required readings: As posted under "materials by week" on Blackboard

Optional readings: As posted under "materials by week on Blackboard."

Prerequisites: There are no pre-required courses for enrollment in this course; however, you should have a working knowledge of Drexel (Blackboard) Learn.

Technical Support: You have access to technical support 24/7 through the Instructional Technology Group (ITG). Click on "**Tech Support**" at the top of the DREXEL LEARN (BbLearn) page.

- Drexel (Blackboard) Learn, 215-895-1224, itg@drexel.edu
- Software or Hardware, 215-895-2020, consult@drexel.edu

COURSE REQUIREMENTS

(1) Read the assigned reading(s) in both required course texts **before** class. This helps to stimulate and fuel class discussions.

(2) ***At least 24 hours before class,*** post (in BbLearn) answers to any assigned discussion questions based on the assigned readings. Please respond to one classmate's post. Dr. Chernets will post to BB learn and email the discussion question assignments the week prior. As time allows, the class will discuss the questions and answers during class or small group breakout sessions to stimulate discussion.

(3) Complete **CITI exercises** for required modules: Plagiarism (RCR-Basic) (ID 15156), Authorship (RCR-Basic) (ID 16597), Collaborative Research (RCR-Basic) (ID 16598), Data Management (RCR-Basic) (ID 16600), and Introduction to RCR (RCR-Basic) (ID 17009). Additionally, complete the following three elective modules: Mentoring (RCR-Basic) (ID 16602), Peer Review (RCR-Basic) (ID 16603), and Environmental and Social Dimensions of Engineering Research (ID 12835). If you are working with animal subjects, you are required to complete CITI training module Using Animal Subjects in Research (RCR-Basic) (ID 13301). If you are working with human subjects, you are required to complete CITI training module Research Involving Human Subjects (RCR-Basic) (ID 13566).
The CITI exercises **(https://www.citiprogram.org/)** are required **in addition to the assigned text reading.** You must pass (≥ 80%) the quizzes to receive credit for them. **Please see separate instructions in the BbLearn course site on how to access the CITI exercises.**
The deadline to complete **CITI exercises is February 4, 2022, at 23:59 pm EST**. Please upload the screenshot to BB learn.

EVALUATION METHODS

This is a pass/fail course. To pass the course, students must attend or make up all required in-classroom sessions (absence policy elaborated below). Moreover, students will need to earn a grade of 75% or higher on the final group assignment.

Evaluation Method	Proportion of Final Grade
Attendance	30
Discussion board (individual work)	20 (4 points x5 posts (excluding introduction post)
CITI online instruction and CITI course quizzes	20
Final group project	30

ATTENDANCE POLICY

To ensure compliance with funding agency requirements, attendance at this course is mandatory, and attendance will be taken at all sections. Students are strongly encouraged to make the required efforts to attend all class sessions for the course section in which they are registered. If an absence is unavoidable for some reason, students should contact Dr. Chernets and arrange to make up the missed lecture by attending a different class section, if at all possible. A written assignment ("think piece") will be given in lieu of attending class for all excused absences. Outside of exceptional circumstances, students who miss more than 2 hours of in-class lectures will fail the course. If there is an exceptional circumstance requiring substantial absences, students should contact Dr. Chernets to make alternate arrangements, which might include taking the course in a later term.

In the event that you miss one lecture, you will have the opportunity to fulfill the course deliverables and advance your understanding of the material by producing a "think piece," thereby critically evaluating the topic as it relates to your own research experience. The think piece should include a discussion of the lecture materials, readings, case studies, and/or a reflection on the relevance of the weekly theme for your own research.

Format Requirements:

- 1-2 pages; double spaced; one-inch margins; name; title of missed session
- Word document saved as "LastName.FirstName.RCRG2022"
- Original work; citations should be consistent but do not need to be in a specific format

Due: Friday, March 11, 2022, at 11:59 pm EST.

ADD/DROP POLICY

The Drexel University course add & drop policies are available here:
https://drexel.edu/provost/policies/course-add-drop/

ADDITIONAL COURSE POLICIES

- Please make every effort to arrive at class on time as a courtesy to others. We will make every effort to begin and end the classes promptly. However, if a discussion is ongoing, interested parties can stay until all discussions are ended. If you must leave prior to the hour to attend another class, simply do so, and please inform the instructor ahead of time.
- Dr. Chernets will communicate with you through BbLearn and through email sent to your DREXEL email address, not to any other email address. Checking BbLearn often is your responsibility, as is making sure your DREXEL email account is not full, i.e., assuring that you can accept the email.
- **Academic Integrity**: Students are expected to exhibit the highest degree of integrity and professionalism in all aspects of their work and are expected to adhere to professional standards of scholarly conduct**.** Cheating, plagiarism or other academic misconduct will be handled per Drexel University policies as defined in the Code of Conduct, and in the Drexel University Student Handbook
  http://drexel.edu/studentaffairs/community_standards/studentHandbook/
  Please familiarize yourself with these documents.

LECTURE SCHEDULE		
Lecture #	**Topics & relation to course objectives**	**Readings**
Lecture 1: Science and Engineering in Society *Via zoom*	• Science and ethics: framing the relationships	• On Being A Scientist: A Guide to Responsible Conduct of Research, Preface (p. ix-xii) and Introduction (p. 1-4), page 12 • Scientific Integrity: Text and Cases in Responsible Conduct of Research -chapter 1,2 • Alok Jha. (September 13, 2012). "False Positives: Fraud and Misconduct Are Threatening Scientific Research." The Guardian. https://www.theguardian.com/science/2012/sep/13/scientific-research-fraud-bad-practice
Lecture 2: Research Misconduct *Via zoom*	• *Federal policy on research misconduct: definition, examples, penalties, & process.* • *Misconduct: its extent and factors influencing it* • *Some considerations regarding misconduct & whistleblowing.*	• On Being A Scientist: A Guide to Responsible Conduct of Research, pages 15, 19 • Drexel University Policy on Research Misconduct. https://drexel.edu/provost/policies/conduct_of_research/ • Optional: Lutz Bornmann. (2013). "Research Misconduct: Definitions, Manifestation, and Extent." *Publications* 2013, 1, 87-98; doi:10.3390/publications1030087
Lecture 3: Conflicts of Interest in Research	• *Conflict of Interest: definitions, conceptual distinctions* • *Financial COI in research: types, extent, federal policies, Drexel Policy*	• Scientific Integrity: Text and Cases in Responsible Conduct of Research -chapter 7 • On Being A Scientist: A Guide to Responsible Conduct of Research , pages 29, 43 • Josephine Johnston. (2008). "Conflicts of Interest." in *The Hastings Center Bioethics Briefing Book for Journalists, Policymakers, and Campaigns*, ed. Mary Crowley (Garrison,NY: The Hastings Center, 2008), 31-34. http://www.thehastingscenter.org/Publications/BriefingBook/Detail.aspx?id=2156 • Optional: Howard Brody. (2011). "Clarifying Conflict of Interest." *The American Journal of Bioethics*, 11:1, 23-28
Lecture 4: The Art of Mentorship	• *What is a mentor? How is mentorship different from supervision?* • *The relationship between mentoring and ethical research* • *Mentoring and role delineation—who is responsible for what?* • *Considerations when choosing a mentor* • *Things to clarify with your advisor or mentor*	• On Being A Scientist: A Guide to Responsible Conduct of Research, pages 48 • *Scientific Integrity: Text and Cases in Responsible Conduct of Research -chapter 3* *Optional reading* • National Institutes of Health, Office of Intramural Training and Education. (n.d.). "Evaluating Potential Mentors." https://www.training.nih.gov/evaluating_potential_mentors • "Advisor/Student." *Science Professor* [online resource]. http://science-professor.scientopia.org/2011/02/07/advisorstudent/ • Drmellivora [pseudonym]. "Toxic Academic Mentors."

	• *Toxic mentoring: what is it, how common is it, and how to deal with it.*	*Tenure She Wrote* [online resource]. https://tenureshewrote.wordpress.com/2013/08/12/toxic-academic-mentors/ • William Neaves. (2012). "The Roots of Research Misconduct." *Nature* 488: 121-122. (access through Drexel library)
Lecture 5: Ethical Guidance for Collaborative Research	• Working in a diverse environment • Communication plans • Process for making decisions on scientific direction • Procedures for resolving conflicts.	• Collaborative Research https://ori.hhs.gov/education/products/niu_collabresearch/collabresearch/crintro.html
Lecture 6: The History and Modern Oversight of Animal and Human Subjects Regulations	• Investigator considerations: the 3Rs and animal welfare • Current philosophical and social controversies • *Ethical principles governing human research* • *IRB and* IACUC *structure and functions* • *Historical and recent controversies* • *Informed consent and risk-benefit assessment*	• On Being A Scientist: A Guide to Responsible Conduct of Research -page 24 • Scientific Integrity: Text and Cases in Responsible Conduct of Research -chapter 5 and 6 • CITI training with **human subjects** (only for students who are working with animal subjects) • CITI training with **animal** experimentation (only for students who are working with human subjects)
Week 7: Integrity in Scientific Research	• Group Assignment – no lecture	• Watch 6 short videos (1-2 minutes each) on Integrity in Scientific Research and reply to the discussion prompt that appears at the end of each video. Submit only one response per group.
Lecture 8: Ethical Issues in Data Management	• *Federal definition of "data" and components of data management* • *Ethical and pragmatic reasons to ensure good data management* • *Data ownership: regulatory considerations* • *Data storage and sharing*	• Research Data Management (RDM) pre-class assignment (posted to BB learn) • Janet D. Stemwedel. (2008). "Should Researchers Share Data?" *Adventures in Ethics & Science* [online resource]. http://scienceblogs.com/ethicsandscience/2008/03/03/should-researchers-share-data/ • Optional: Jennifer A. Thomson. (2007). "How to Start and Keep a Laboratory Notebook." *iP Handbook of Best Practices*. (OK to skim) http://www.iphandbook.org/handbook/ch08/p02/
Lecture 9: Authorship & Publication	• *Some recent controversies regarding scientific authorship & publication* • *Scientific publication: definition, purposes, goals* • *What does it mean to be an "author" on a scientific paper?*	• Scientific Integrity: Text and Cases in Responsible Conduct of Research -chapter 4 • Fred Barbash. (July 11, 2014). "An Obscure Academic Journal. A Memorable Peer Review Scandal." *The Washington Post*. http://www.washingtonpost.com/news/morning-mix/wp/2014/07/11/the-most-brazen-peer-review-scandal-anyone-can-remember/

	• *Bylines: authorship guidelines by discipline and points of debate* • *Problematic authorship practices* • *Peer review: ethical considerations & guidelines*	• Tom Spears. (August 20, 2014). "Respected Medical Journal Turns to Dark Side." *The Ottawa Citizen.* http://ottawacitizen.com/technology/science/respected-medical-journal-turns-to-dark-side • Vijaysree Venkatramen. (April 16, 2010). "Conventions of Scientific Authorship." *Science*. http://www.sciencemag.org/careers/2010/04/conventions-scientific-authorship • Bernard Lo. (2009). "When Authorship Turns Sour," *CTSI Research Ethics Blog*. (See comments as well). https://accelerate.ucsf.edu/blogs/ethics/when-authorship-turns-sour. • CITI training plagiarism
Lecture 10: Ownership of Data and Intellectual Property	*Data ownership concideration:* • *work conducted in aresearch laboratory* • *supported by government/company funds*	• Scientific Integrity: Text and Cases in Responsible Conduct of Research -chapter 9 • On Being A Scientist: A Guide to Responsible Conduct of Research -page 39

Assignments

	Assignment	**Due date**
Lecture 1: Science and Engineering in Society *Via zoom*	please introduce yourself. 1. What is your graduate program? (masters, Ph.D., then specific program) 2. What type of research will you be carrying out as part of your graduate program? (bench research, clinical patient-oriented research, quality improvement research, qualitative/survey-based research, non-research masters, literature review-based thesis, etc.)	**Friday, January 7, 2022, 23:59 pm**
Lecture 2: Research Misconduct *Via zoom*	Why do you think a scientist would fabricate, falsify, or plagiarize? 2. If you are suspicious of research misconduct, what do you think you should do? Who is the research integrity officer at Drexel? 3. Why should you report misconduct? Who will be harmed by an act of scientific misconduct?	**Tuesday, January 11, 2022, 23:59 pm**
Lecture 3: Conflicts of Interest in Research	Describe a conflict of effort you might face as a graduate student/predoctoral trainee. How would you manage it?	**Tuesday, January 18, 2022, 23:59 pm**
Lecture 4: The Art of Mentorship		

Lecture 5: Ethical Guidance for Collaborative Research		**CITI exercises are due <u>Friday,</u> February 4, 2022, at 23:59 pm EST**
Lecture 6: The History and Modern Oversight of Animal and Human Subjects Regulations		
Week 7 Integrity in Scientific Research	**Group Assignment** -watch 6 short videos (1-2 minutes each) and reply to the discussion prompt that appears at the end of each video. Submit only one response per group.	**<u>Friday, February 18, 2022, 23: 59 pm</u>**
Lecture 8: Ethical Issues in Data Management	What are the six major areas for best practices when managing your data?	**<u>Tuesday, February 22, 2022, 23:59 pm</u>**
Lecture 9: Authorship & Publication	1. Should all coauthors share equally in the blame and punishment when fabrication, falsification, or plagiarism is proved to have occurred in a published paper? Yes or No, and why? 2. Should the scientific publication enterprise do more to be able to detect falsified or fabricated data during the peer review process? Why or why not?	**<u>Tuesday, March 1, 2022, 11:59 pm</u>**
Lecture 10: Ownership of Data and Intellectual Property	How would you go about deciding whether some aspect of your research merited seeking patent protection? (Chapter 9)	**<u>Tuesday, March 8, 2022, 23:59 pm</u>**
"Think piece" for any missed lectures	In the event that you miss one lecture, you will have the opportunity to fulfill the course deliverables and advance your understanding of the material by producing a "think piece," thereby critically evaluating the topic as it relates to your own research experience. The think piece should include a discussion of the lecture materials, readings, case studies, and/or a reflection on the relevance of the weekly theme for your own research. Format Requirements: • 1-2 pages; double spaced; one-inch margins; name; title of missed session • Word document saved as "LastName.FirstName.RCRG2022" • Original work; citations should be consistent but do not need to be in a specific format	**Friday, March 11, 2022, at 11:59 pm EST.**

DREXEL UNIVERSITY POLICIES

Academic Honesty

Forms of academic dishonesty include plagiarism, fabrication, cheating, and academic misconduct. Cheating and plagiarism are serious misconduct issues that result in negative consequences for all involved in the learning environment. Any serious misconduct of this nature will be addressed directly and expeditiously by Graduate College and Drexel University. To protect and maintain a superior learning environment, all students must review and adhere to Drexel University's Student Conduct & Community Standards. Drexel University policies regarding academic integrity are listed at:

http://drexel.edu/studentaffairs/community_standards/studentHandbook/

http://www.drexel.edu/provost/policies/academic_dishonesty.asp

If there is evidence that a violation of Drexel University's Academic Honesty Policy has occurred, the faculty member indicates what sanction he/she believes is appropriate to the Graduate College, who in turn will determine whether such a sanction is commensurate with the action and evidence, and if necessary makes adjustments to the sanction. For the first infraction, the sanction may include:

- An "F" for the assignment or exam
- Reduction of course grade
- Failure for the entire course, with the inability to withdraw.
- Examples of other actions that may be deemed appropriate by the faculty member include, but are not limited to, requiring the student to re-take the exam, re-complete an assignment, or complete an assigned exercise.

Drexel University Policy on Plagiarism

(taken directly from http://www.drexel.edu/provost/policies/academic_dishonesty.asp#plagiarism)

Plagiarism is the inclusion of someone else's words, ideas, or data as one's own work. When a student submits work for credit that includes the words, ideas, or data of others, the source of that information must be acknowledged through complete, accurate, and specific references, and, if verbatim statements are included, through quotation marks as well. By placing his/her name on work submitted for credit, the student certifies the originality of all work not otherwise identified by appropriate acknowledgments. Plagiarism covers unpublished as well as published sources. Examples of plagiarism include, but are not limited to:

- Quoting another person's actual words, complete sentences or paragraphs, or an entire piece of written work without acknowledgment of the source
- Using another person's ideas, opinions, or theory, even if it is completely paraphrased in one's own words without acknowledgment of the source
- Borrowing facts, statistics, or other illustrative materials that are not clearly common knowledge without acknowledgment of the source
- Copying another student's essay test answers
- Copying, or allowing another student to copy, a computer file that contains another student's assignment, and submitting it, in part or in its entirety, as one's own
- Working together on an assignment, sharing the computer files and programs involved, and then submitting individual copies of the assignment as one's own individual work

Students are urged to consult with individual faculty members, academic departments, or recognized handbooks in their field if in doubt regarding issues of plagiarism.

Drexel University Policy on Cheating

(taken directly from http://www.drexel.edu/provost/policies/academic_dishonesty.asp#cheating)

Cheating is an act or an attempted act of deception by which a student seeks to misrepresent that he or she has mastered information on an academic exercise that he/she has not mastered. Examples include, but are not limited to:

- Copying from another student's test paper
- Allowing another student to copy from a test paper
- Unauthorized use of course textbook or other materials, such as a notebook to complete a test or other assignment from the faculty member

- Collaborating on a test, quiz, or other projects with any other person(s) without authorization
- Using or processing specifically prepared materials during a test such as notes, formula lists, notes written on the students clothing, etc. that are not authorized
- Taking a test for someone else or permitting someone else to take a test for you

Disability Statement: Drexel University is committed to providing students who have disabilities with an equal opportunity to fully participate in its courses. Students with disabilities requesting accommodations and services at Drexel University need to present a current accommodation verification letter (AVL) to faculty before accommodations can be made. This must be done prior to the midterm exam. AVL's are issues by the Office of Disability Services (ODS). For additional information, contact ODS at www.drexel.edu/edt/disability, 3201 Arch St., Suite 210, Philadelphia, PA 19104, 215.895.1401 (V) or 215.895.2299 (TTY).

Appropriate Use of Course Materials

It is important to recognize that some or all of the course materials provided to you may be the intellectual property of Drexel University, the course instructor, or others. Use of this intellectual property is governed by Drexel University policies, including the IT-1 policy found at: https://drexel.edu/it/about/policies/policies/01-Acceptable-Use/

Briefly, this policy states that all course materials, including recordings provided by the course instructor may not be copied, reproduced, distributed, or re-posted. Doing so may be considered a breach of this policy and will be investigated and addressed as possible academic dishonesty, among other potential violations. Improper use of such materials may also constitute a violation of the University's Code of Conduct found at: https://drexel.edu/cpo/policies/cpo-1/ and will be investigated as such.

Time Zones and Assignment Due Dates

Drexel's Blackboard servers are located in the Eastern Time Zone. All due dates and times are displayed in Eastern Time. Students are responsible for adjusting any deadlines to their own time zone.

Email Class Liability

Neither Drexel University nor the instructor can be held responsible for the content of any personal messages, which are sent from one student directly to another student using the online email delivery system. It is expected that all students will adhere to accepted codes of ethical, personal, and civil conduct when conversing online using email or engaging in any online chat sessions. Failure to abide by such codes of conduct and etiquette may result in expulsion from the course with a failing grade. Consult the official university code of student conduct for further information.