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The objective of this course is to present and discuss responsible conduct of research (RCR) in chemistry. Successful completion of the course will satisfy federal guidelines for RCR training and documentation.

Required Text: Responsible Conduct of Research by Adil Shamoo and David Resnik

Optional Texts: SIGMA XI, Honor in Science
The Ethical Chemist by Jeffrey Kovac
Research Ethics: A Reader by Demi Elliott and Judy E. Stern (Eds)
The Ethics of Science: An Introduction (Philosophical Issues in Science) by David Resnik

Short Description: Responsible conduct of research in chemistry with emphasis on ethics of conducting research, data analysis, and conformance to federal and community guidelines in the chemical laboratory.

The course consists of two required major sections:

1. CITI online training in Physical Science modules; contains text embedded case studies and quizzes (approximately 120 questions). Time equivalent: 10 lecture hours; minimum passing grade 80%. Students required to submit print outs of all sections and sheet with final grade to receive credit.
2. Discussion-based RCR: a series of lectures/discussion on topics of relevance; attendance (sign-in) and successful completion of written assignments. Late assignments will lose points.

Grading (with tentative cutoffs):

A+ = 95% and above	
A = 90%	CITI online quizzes (maximum points.) = 250
A- = 88%	<u>Discussion-based attendance/assignments = 300</u>
B+ = 84%	TOTAL = 550 maximum
B = 80%	
B- = 77%	Grade based on percentage of total points
C+ = 73%	
C = 70%	Note: Sept. 12 is the last day to withdraw
C- = 65%	With a W

The course will meet the equivalent of twice each week in a minimester format.

(See page 2)

Tentative Schedule: (Sign-in required on all lecture/discussion sessions.)

<u>Date</u>	<u>Week</u>	<u>Lecture/Discussion (100 min.)</u>	<u>Lecture/Discussion (100 min.)</u>
8/26-8/28	1	Intro/Overview of course	CITI*
9/2-9/4	2	Misconduct/Plagiarism	Data Management
9/9-9/11	3	Publication/Responsible Authorship	Peer Review/Mentoring
9/16-9/18	4	Conflicts of Interest	Collaborative Research
9/23-9/25	5	Human Subjects/Animal Welfare**/CTI*	Overview
9/30-10/2	6	CITI*	CITI*
10/7	7	CITI*	

*Credit for online actual time based on pilot runs by students

**Researchers dealing with these topics should complete the online section and hand in documentation; optional-not required for majority of students; no formal lecture on this day.

Assignments: Other than CITI; turn in at the start of class (before discussion)
(CITI must be completed by the end of Minimester 1)

Misconduct/Plagiarism - Read pages 1-38, 140-166; Written: Cases 2,3,4,5,6,7,8
(pages 161-165)

Data management - Pages 39-67; Written: Cases 1,2,4,7,9

Publication/Responsible Authorship - pages 98-109; Cases 2 & 3; pages 110-139; Cases 5 & 11

Peer Review/Mentoring - Pages 68-80; Cases 1 & 2

Conflicts of Interest - Pages 189; Cases 2,8,9,12

Collaborative Research - pages 81-97; Cases 1,2,4

Overview: Final Assignment (see below)

Final Written Assignment (due Oct. 7):

1. Define the following as applied to Chemical Research (graduate student perspective).
 - a. Fabrication (misconduct)
 - b. Falsification (misconduct)
 - c. Plagiarism (misconduct)
 - d. Conflict of Interest
 - e. Collaborative Research
 - f. Intellectual Property

2. Discuss the following as they apply to chemistry from the graduate student's perspective.
 - a. Data Acquisition and Management
 - b. Publication/Authorship
 - c. Academic/Industrial Research Collaborations