

Department of Biochemistry

Scholarly Ethics and Integrity Component in Graduate Education

A. Introduction

Commission on Graduate Studies and Policies Resolution 2012-13B mandates that “the Program of Study for all graduate students show a record of the student’s participation in the particular ethics and integrity activities delineated by the student’s program, department, or college, as part of the student’s graduation requirements.” This document describes the ethics and integrity training component for students in the Department of Biochemistry’s graduate program.

B. Ethical and Integrity Training Requirements

The Appendix to CGSP Resolution 2012-13B details the required and optional topics. These are listed below.

Required Topics:

- 1) Plagiarism and other violations of the Graduate Honor Code
- 2) Proper use of professional conventions in citation of existing research and scholarship, accurate reporting and ownership of findings, and acknowledgement of contributions to the work
- 3) Ethical standards in teaching, mentoring, and professional activities
- 4) Available avenues for reporting alleged misconduct

Optional Topics:

- 1) Appropriate lab procedures and maintenance of lab notebooks and other research documentation
- 2) Fair use of publications, software and equipment
- 3) Appropriate research protocols involving human rights and animal subjects; Institutional Review Board and/or Institutional Animal Care and Use Committee certification
- 4) Guidelines for maintenance of confidentiality (and, where relevant, anonymity) in research
- 5) Guidelines for determination of authorship
- 6) Appropriate grant and contract management, including appropriately asserting personal or program capacities and competencies when applying for grants and contracts
- 7) Discipline- or field-specific professional ethics

C. Components of Ethical and Integrity Training for Biochemistry Graduate Students

Required and optional components of ethical and integrity training for Biochemistry graduate students are described below. The required and optional topics that are covered by each component are listed.

Required Components:

1) *ALS 5324: Research Ethics in Agriculture and Life Sciences*

ALS 5324 (1 credit) is offered on Pass/Fail basis in the Fall semester. This course is designed to satisfy all mandatory ethics and integrity training topics as well as a number of the optional topics that are relevant to Biochemistry graduate students. Please see the “ALS 5324 Syllabus” and “ALS 5324 Alignment with the Commission on Graduate Studies and Policies Resolution 2012-13B” and the end of this document.

Relevant Topics: Required #1-4; Optional #1, 3, 4, 5, 7.

2) *BCHM 5784G: Advanced Applications in Molecular Life Sciences*

BCHM 5784G (3 credits) is offered on an A-F basis in the Spring semester. The Department’s Qualifying Exam, a requirement for first-year students, is embedded in this course. The Qualifying Exam requires the student to prepare a mock grant application. During the course, students will be trained in ethical considerations relevant to the preparation of scientific grants and manuscripts. These will include: plagiarism, proper citation of the scientific literature, accurate reporting of findings, and fair use of publications.

Relevant Topics: Required #1, 2; Optional #2, 6.

3) *GRAD 5004: GTA Training Workshop*

From the Graduate Catalog: “A three-day orientation to the role of a GTA at Virginia Tech and review by experienced faculty and GTAs of essential guidelines for effective classroom and laboratory communication and management. Microteaching component completes the program.”

Relevant Topics: Required #3.

Optional Components:

Students requiring training in use of animals or human subjects in research will obtain this through online CITI training modules:

- 1) Lab Animal Welfare Course
- 2) Human Subjects Research Course

Relevant Topics: Optional #3.

D. Implementation

The Department of Biochemistry will ensure the implementation of the ethics and integrity training component in the education of our graduate students in the following ways.

- 1) This document will be provided to incoming graduate students during Orientation Week, which takes place the week prior to the start of classes. The Graduate Director will discuss the requirements with the students.
- 2) At the first meeting with their Advisory Committee, graduate students will be required to describe their progress in satisfying the ethics and integrity training requirements and to outline a plan for completing any outstanding requirements. The Committee will also determine whether any additional training in the Optional Topics is required on the basis of the student's research plans.
- 3) The Advisory Committee will confirm that students have completed all required elements of the ethics and integrity training prior to defense of the thesis.
- 4) Completion of the training requirement will be documented on the student's Plan of Study.

Course Description

Principles of and skill development in research ethics to enhance professional preparation in agriculture and the life sciences. Pre: Graduate standing. P/F only. (1H, 1C)

Prerequisite: Graduate standing

Schedule

Mondays, 5:30 – 6:30 pm

1760 Litton-Reaves Hall

Office Hours: By appointment only; e-mail

Hannah to schedule

Lead Instructor

Hannah H. Scherer

288 Litton-Reaves Hall

231-1759

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Learning Objectives

Having successfully completed this course, you will be able to:

- Use the process of science in developing research plans
- Implement relevant procedures for conducting high-quality, compliant research and data management in your field
- Explain and apply the ethics of research and proper conduct of professional scientists
- Identify the characteristics of effective mentoring relationships
- Outline ethical considerations in the publication and peer review process
- Describe how authorship/intellectual property standards apply to your work

Required Text

Snieder, R. & Larner, K. (2009). *The Art of Being a Scientist: A Guide for Graduate Students and their Mentors*. New York, NY: Cambridge University Press. Pp. x, 286.

Grading

The assignments and class material in this course are intended to help you build skills for success in your graduate career and beyond. Thus, it is up to you to commit to getting what you can out of the opportunities available to you. Grading is on a Pass/Fail basis and minimum score of 80% is considered a passing grade. Grades will be based on the following criteria:

Item	Percentage
Attendance and Participation	50%
Assignments	50%

- **Attendance and Participation.** Active participation in class meetings is an important criterion for success in this course. If all of us are active members of the group, it will be a rewarding learning experience as we will have the opportunity to learn from each other. Expectations for active participation include: contributing meaningfully to class discussions, showing respect for the ideas of others, and completing in-class activities with a positive attitude.
- **Assignments.** There will be an assignment each week that will be due before class begins. Late assignments will be accepted for 75% credit until 9 am Tuesdays. Assignments will not be accepted after the late submission deadline unless prior arrangements have been made. All assignments will be posted on Scholar and will be accepted only as electronic submissions through Scholar unless otherwise indicated.

Accommodations for Students with Disabilities

Reasonable accommodations are available for students who have a disability. Students should contact the Services for Students with Disabilities (SSD), 150 Henderson Hall, 231-3788 (V), 231-1740 (TTY); Susan P. Angle, spangle@vt.edu, www.ssd.vt.edu. "Students with disabilities are responsible for self-identification. To be eligible for services, documentation of the disability from a qualified professional must be presented to SSD upon request. Academic adjustments may include, but are not limited to: priority registration, auxiliary aids, program and course adjustment, exam modifications, oral or sign language interpreters, cassette taping of text/materials, notetakers/readers, or assistive technology."

Honor Code Statement

The Graduate Honor Code will be strictly enforced in this course. All assignments submitted shall be considered graded work, unless otherwise noted. All aspects of your coursework are covered by the Graduate Honor System. Any suspected violations of the Graduate Honor Code will be promptly reported to the Graduate Honor System. According to the Constitution of the Graduate Honor System at Virginia Tech, "The fundamental beliefs of the Graduate Honor Code are: (1) To trust in a person is a positive force in making that person worthy of trust, (2) To study, perform research and teach in an environment that is free from the inconveniences and injustices caused by any form of intellectual dishonesty is the right of every graduate student, and (3) To live by and Honor System, which places a positive emphasis on honesty as a means of protecting this right, is consistent with, and a contribution to, the University's quest for truth." (see <http://ghs.graduateschool.vt.edu>)

Course Schedule

Date	Topics
August 26	Introduction to the course: why ethics training? Public funding of universities and research
September 2	Graduate Honor Code
September 9	The process of science/ Initiating a research plan/ Research ethics
September 16	Ethics in data management/ Data integrity
September 23	Maintenance of research documentation (lab notebooks) (<i>Deborah Good, HNFÉ</i>)
September 30	Ethical standards in teaching
October 7	Compliance/ regulations in conducting research (IRB)
October 14	Compliance/ regulations in conducting research (<i>Isis Mullarky, Dairy Science</i>) (IACUC and IBC)
October 21	Ethics in publication
October 28	Using and citing the literature/ avoiding plagiarism (<i>Margaret Merrill, VT libraries</i>)
November 4	Peer review
November 11	Professionalism and collaboration
November 18	Ethical standards in mentoring
November 25	<i>No Class: Thanksgiving Break</i>
December 2	Intellectual Property and Licensing/ Authorship Issues (<i>Greg Hess, VTIP</i>)
December 9	Taking action

ALS 5324 Alignment with Commission on Graduate Studies and Policies Resolution 2012-13B: Resolution to Include a Scholarly Ethics and Integrity Component in Graduate Education

Prepared by: Hannah H Scherer, Research Assistant Professor, Agricultural and Extension Education

ALS 5324: Research Ethics in Agriculture and Life Sciences was developed to address the need for graduate-level research ethics training in the College of Agriculture and Life Sciences. Particular attention has been given to topics outlined in the Appendix to CGSP Resolution 2012-13B in order to help departments in CALS meet the ethics training requirements. The course is structured such that students are introduced to the key concepts through reading or direct instruction, while the majority of class time is devoted to discussion of the application of these ideas in real situations. Guidelines for ethical decision-making and negotiating the “gray area” between ethical and non-ethical behavior are emphasized in these discussions. The table below outlines how each of the required topics and selected optional topics from the CGSP Resolution are addressed in the course.

CGSP Resolution Topic	ALS 5234 Syllabus Topic	Comments
Required		
(one topic per class period)		
1 Plagiarism and other violations of the Graduate Honor Code	▶ Graduate Honor Code	
2 Proper use of professional conventions in citation of existing research and scholarship, accurate reporting and ownership of findings, and acknowledgement of contributions to the work	▶ Using and citing the literature/avoiding plagiarism	Guest speaker from VT libraries guides discussion of these issues
	▶ Ethics in publication	This includes a discussion of guidelines for determination of authorship (optional topic, see below)
3 Ethical standards in teaching, mentoring, and professional activities	▶ Ethical standards in teaching ▶ Ethical standards in mentoring ▶ Peer review ▶ Professionalism and collaboration	
4 Available avenues for reporting alleged misconduct	▶ Taking action (whistleblowing)	This topic is also incorporated throughout the course where appropriate (Honor Code, professionalism, peer review, etc.)
Optional		
1 Appropriate lab procedures and maintenance of lab notebooks and other research documentation	▶ Maintenance of research documentation (lab notebooks)	
3 Appropriate research protocols involving human	▶ Compliance/ regulations in conducting research (IRB)	Students are required to complete the online training

	and animal subjects; IRB and/or IACUC certification	▶ Compliance/ regulations in conducting research (IACUC and IBC)	for IRB, IACUC, <i>or</i> IBC
4	Guidelines for maintenance of confidentiality (and, where relevant, anonymity) in research	▶ Intellectual Property and Licensing ▶ Peer Review	Guest speaker from VTIP
5	Guidelines for determination of authorship	▶ Ethics in publication	
7	Discipline or field specific professional ethics	▶ Why ethics training? ▶ The process of science/ Initiating a research plan/ Research ethics ▶ Ethics in data management/ Data integrity	Includes an introduction to the Responsible Conduct of Research (RCR) using examples of common violations Application of RCR in the planning stages of research Includes homework in which students are required to discuss this topic with an experienced researcher in their research group/ lab