Graduate Education in Research Ethics for Scientists and Engineers: Graduate Awareness Workshop*

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Abstract

<name>Caution–this module is still under construction!</name> "Graduate Education in Research Ethics for Scientists and Engineers" is a project funded by the National Science Foundation (SES 0629377) to design and integrate a pilot program in research ethics for graduate students in science and engineering. This project is being built around three key components three workshops: (1) a Graduate Awareness Workshop to create awareness of fundamental ethical issues in research, (2) a Moral Deliberation Workshop to promote skills of moral deliberation, (3) a Case Analysis Workshop that will provide frameworks and strategies for structuring and framing problematic situations in research ethics, and (4) a capstone activity, an Ethics Banquet, where students will generate poster presentations on their work in research ethics. This first module introduces the Graduate Awareness Workshop to students. It will be accompanied shortly by an instructor module that provides insights into how to approach teaching basic issues in research ethics. This module has been developed through Connexions as a part of the EAC Toolkit project, NSF SES 0551779.

1 Module Introduction

Graduate Awareness Workshop

Upon entering UPRM, you will be asked to participate in an awareness workshop that introduces basic ethical issues and concepts pertinent to research activities. A Pre-Test involving discussion of scenaros in research ethics will be followed by a lecture that defines key concepts and situates the fundamental problems of research ethics in its "Three Capital Sins," i.e., fabrication, falsification, and plagiarism. Integrated into this part of the workshop will be a demonstration of the intrinsic connection between science and ethics. This workshop closes with a Post-Test designed to measure and assess any changes in your awareness.

2 What you are going to do.

Workshop Activities

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- To prepare for the workshop, you will read a short selection on research ethics and explore the links provided in this module on the Hwang Woo Suk, Tuskegee, and Enron cases. This will get you ready for the workshop.
- **Exercise 1:** Take a workshop pre-test in Research Ethics
- **Exercise 2:** Identify key duties in the research ethics context, the duties of researchers, duties of professors to students, and duties of students to professors.
- **Exercise 3:** Reflect and write on the fundamental mission an purpose of the university. What goes on within the university? How does the university contribute to the surrounding community?
- **Exercise 4:** You will return to the cases presented in the first part of the workshop. What issues covered during the workshop on research ethics arose in these cases? For example, what issues discussed in the workshop arose in the Tuskegee case?

Beginning your exploration of research ethics. Click on the links to the following three cases:

- Hwang Woo Suk
- Tuskegee
- Enron (Exploring the link to Enron will also help you to access interviews with Jeff Skilling.)

Key Issues and Themes in Research Ethics

- **Conceptual map** exploring the etymological roots of ethics and its relations and differences with concepts like morality, religion, and law.
- **Research Ethics Themes:**Research gravitates around a double axiological axis. The first deals with issues surrounding the commitment of any academic endeavor to the **pursuit of truth**. The second arises from the **social responsibility** of the researcher to the whole academic enterprise. This double axiological axis provides a basis for framing issues in Research Ethics.
- **Academic integrity** as the condition that makes possible the university's mission.
- The intrinsic connection between **science and ethics**
- **Three Capital Sins** against academic integrity: fabrication, falsification, and plagiarism
- What is **ethical relativism** and **absolutism**?

Workshop Objectives

1. Determine your initial awareness of ethical issues in research ethics (Tied to Pre-Test activity)
2. Deepen your awareness of ethical issues that arise in scientific and engineering research. (Tied to Presentation activity)
3. Provide you with a conceptual map of key issues and concepts in research ethics. (Tied to Presentation activity)
4. Uncover and assess any changes or improvements in your awareness of ethical issues that arise in scientific and engineering research. (Tied to Post-Test activity)

3 What you will learn.

Ética:

- Aunque no universalmente aceptado, muchos autores adoptan hoy la siguiente distinción:
- **Moral**: Códigos de conducta que rigen diversas comunidades humanas
- **Ética**: Disciplina filosófica que estudia la conducta humana desde el punto de vista de los valores y deberes morales
- See also
- Ética: "Disciplina filosófica que estudia racionalmente la conducta humana desde un punto de vista de los deberes y virtudes morales".

- Jorge José Ferrer, y Juan Carlos Álvarez, **Para Fundamentar la Bioética**, Editorial Desclee De Brouwer, 2003: 26

Ejercicio

1. Escriba dos acciones o actitudes de un(a) estudiante que van en contra de la integridad académica.
2. Escriba dos acciones o actitudes de un profesor(a) que van en contra de la integridad académica

Qué es un dilema ético:

- Un dilema ético puede definirse como un conflicto que la persona experimenta entre dos o más obligaciones morales en una circunstancia particular
- Joseph R. Herkert, **Social, Ethical, and Policy Implications of Engineering**, IEEE Press, 2000

Integridad Académica

- Valores relacionados a la búsqueda y comunicación de los distintos saberes.
- Valores, normas y virtudes relacionadas con el cumplimiento de la misión universitaria: búsqueda del saber, aplicación de los conocimientos, impacto a la sociedad.
- **Condición que posibilita la Misión de la Universidad**

Investigación y Responsabilidad Social

- No atropellar el interés de los sujetos de estudio.
- No atentar contra los intereses de instituciones participantes.
- No atentar contra los intereses de la sociedad.

Investigación y Responsabilidad Social

- Investigación con sujetos humanos.
- Consentimiento informado y voluntario.
- Investigación con animales de laboratorio.
- Política Pública (Comité de Protección de Sujetos Humanos en la Investigación,) IRB
- Relación con la industria, comunidad, y sociedad.
- Protección ambiental

Tres Pecados Capitales contra la Integridad Académica

1. Fabricación, invención información o datos de experimentos que no se efectuaron.
2. Falsificación de datos, alteración de datos experimentales, resultados, o información.
3. Plagio, apropiación de métodos, datos, cuerpo de un texto, trabajos sin citar o reconocer la fuente.

4 What did you learn?

Ejercicio

1. Escribe 5 deberes que entiendas deben tener los Investigadores
2. Escribe 5 deberes que entiendas deben tener los Profesores/TAs
3. Escribe 5 deberes que deban tener los estudiantes para con los Profesores/TAs

5 References

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6 Presentations for Graduate Awareness Workshop

Below are two presentations upon which different variations of the Graduate Awareness Workshop will be built. They both explore basic and intermediate moral concepts such as rights, duties, plagiarism, and integrity. They also contain material and exercises designed to help capstone design courses in engineering and science effectively integrate ethical issues. In addition to the presentations, the last media file contains a document that provides the Pre-Test, Post-Test, and GAW evaluation forms in Word format.

Presentation: Integridad Academica y Etica de la Investigacion by Luis Jimenez, Efrain O'Neill, and Eddie Marrero

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http://cnx.org/content/m14400/latest/GAW_Long.ppt

Figure 1: This Spanish presentation provides a general introduction to academic integrity and research ethics. It has been tested with graduate students in a Graduate Awareness Workshop various times in the spring and summer of 2007 in connection with NSF grant 0629377, Graduate Education in Research Ethics for Scientists and Engineers.

Presentation: La actividad academica como empresa moral by Jorge Ferrer and Efrain O'Neill

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http://cnx.org/content/m14400/latest/GAW_Short.ppt

Figure 2: This presentation developed for incoming graduate students is designed to develop a preliminary basis of ethical awareness upon which moral deliberation and case analysis skills will be built. Written in Spanish, this presentation was developed by Dr. Jorge Ferrer and Dr. Efrain O'Neill

September 29 2007 Presentation

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http://cnx.org/content/m14400/latest/GAWSept292007.ppt

Figure 3: This figure contains the Power Point presentation given for the GAW on September 29, 2007. To date it is the most recent version of the workshop.

Graduate Awareness Workshop Pre and Post Test Exercises

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http://cnx.org/content/m14400/latest/AssessGAW.doc

Figure 4: This presentation, developed by Efrain O'Neill and Luis Jimenez, has been used to introduce research ethics to incoming graduate students in Electrical Engineering. Eddie Marrero and Jorge Ferrer also contributed material.

Issue Identification Workshop Presentation

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http://cnx.org/content/m14400/latest/RE_Issues_Nov07_V3.ppt

Figure 5: Clicking on this figure will open the powerpoint presentation used in a faculty issue identification activity held at the University of Puerto Rico at Mayaguez on November 29, 2007.