Ethical Issues in Graduate Research

1. Graduate Student Workshop Series
    1. Graduate Education in Research Ethics for Scientists and Engineers: Graduate Awareness Workshop
    2. Graduate Education in Research Ethics for Scientists and Engineers: Moral Delibaration Workshop
    3. Graduate Education in Research Ethics: Case Analysis Workshop
    4. Graduate Education in Research Ethics for Scientists and Engineers: Graduate Research Ethics Banquet
2. GERESE Faculty Development Workshops
    1. GERESE--A Faculty Workshop
    2. Faculty Retreat in Research Ethics--Modules and Issues
3. Research Ethics Modules for Business, Society, and Government
    1. Ethical Issues in Graduate Research
    2. Writing and Analyzing Ethics Cases in Business and Research Ethics

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

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.

What you are going to do.

Workshop Activities

- 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)

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.

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

References

1. Kohlberg, Lawrence. 1981. **The Philosophy of Moral Development: Essays on Moral Development**, vol.1. San Francisco: Harper and Row.
2. Pritchard, Michael S. 1996. **Reasonable Children: Moral Education and Moral Learning**. Lawrence, KS: University of Kansas Press: 11.
3. Rest, James, Narvaez, Darcia, Bebeau, Muriel, and Thoma, Stephen. 1999. **Postconventional Moral Thinking: a Neo-Kohlbergian Approach**. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
4. Huff, Chuck and Frey, William. 2005. "Moral Pedagogy and Practical Ethics" in **Science and Engineering Ethics** 11(3): 394-397.
5. Cruz, Jose and Frey, William. 2003. "An Effective Strategy for Integrating Ethics Across the Curriculum in Engineering: An ABET 2000 Challenge" in **Science and Engineering Ethics** 9(4): 546-547.
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7. Ian Barbour, Ethics in an Age of Technology, HarperCollins, 1993.
8. Elena Lugo, Ética Profesional para la Ingeniería, Ediciones Riqueña, Librería Universal.
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10. Charles E. Harris, Michael S. Pritchard, and Michael J. Rabins, Engineering Ethics: Concepts and Cases, Wadsworth Publishing Company, 1995.
11. Joseph R. Herkert, Social, Ethical, and Policy Implications of Engineering, IEEE Press, 2000.
12. William Frey and Jose Cruz, Ethics Across the Curriculum Workshop, February 22, 2002.
13. Stephen R. Covey, Los 7 hábitos de la gente altamente efectiva, Paidos, 1997.
14. Louis P. Pojman, Ethics: Discovering right and Wrong, Wadworth Publishing Company, 1990.
15. Jorge José Ferrer, y Juan Carlos Álvarez, Para Fundamentar la Bioética, Editorial Desclee De Brouwer, 2003.

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
https://cnx.org/content/m14400/

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
https://cnx.org/content/m14400/

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
https://cnx.org/content/m14400/

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
https://cnx.org/content/m14400/

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

https://cnx.org/content/m14400/

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.

Graduate Education in Research Ethics for Scientists and Engineers: Moral Delibaration Workshop

Module Introduction

Graduate students will participate in a follow up workshop during their second semester of study that will be designed to add skills of ethical evaluation to those of ethical awareness. This workshop will advance on the first workshop (Graduate Awareness Workshop) through presentations of a taxonomy of ethical issues in research called the "Double Axiological Axis" and through a framework that integrates teleology and deontology to enable students to introduce ethical theory and principle into moral deliberation. Students will practice the skills presupposed by these presented materials by deliberating on a case in research ethics that has been chosen because it presents a conflict between moral considerations. Students will be guided through the process of identifying the conflicting moral elements and designing ethically acceptable courses of action. This workshop will target the skill of ethical evaluation and be assessed in terms of the success of the participants in resolving the conflict posed by the case over which they deliberate. Workshop objectives, outcomes, and activities are summarized below.

Module Under Construction
This workshop module is still under development. It is being published in the Connexions Content Commons to allow students participating in the workshops and interested faculty to react to its different parts and to participate in its continued development.

Objectives	Activities
Systematic introduction to a	Presentation: Ethical Issues in Research (Double Axiological Axis)

taxonomy of key issues in research ethics	
Introduction of ethical theory and principle to aid in moral reasoning and moral judgment in research ethics	Presentation: Teleological and Deontological moments of ethical reflection in research ethics
Students learn to arbitrate between conflicting moral and practical considerations	Reflection Exercise: Students are presented with a case raising a moral conflict, such as a conflict between duties or rights. Students then use guidelines and reflection to resolve the conflict

Moral Deliberation Workshop

Module Activities

- Presentation on "Ethical Issues in Research." These issues will be presented in the form of a taxonomy based on a "double axiological axis." The first axis explores issues related to the pursuit of truth while the second looks at how research stands in relation to social responsibility.
- A presentation on ethical theory and principle (derived from Teleological and Deontological theoretical standpoints) will help students develop their moral reasoning and judgment in the context of research ethics.
- Student will examine a case that in which basic moral elements are in conflict. This will provide them with practice in using the taxonomy of issues and the framework based on teleology and deontology.

Module Objectives

Objectives This workshop series is based on four skills for ethical empowerment that have been detailed in Cruz/Frey 2003: ethical awareness, ethical evaluation, ethical integration and ethical prevention. This list of moral skills is by no means exhaustive or exclusive. For example, it does not cover moral imagination, moral creativity, becoming a member of a professional community, or perseverance. Readers are encouraged to consult the moral development skills that are available in Kohlberg, Rest, Huff/Frey, and the widely accepted Hastings Center List. Bibliographical references below will provide ample resources that different institutions or groups can use to build a list of skills of moral development to fit their needs and resources.

- Ethical Awareness consists of the student's ability to select and frame moral issues and problems that arise in ordinary, day-to-day research practice.
- Ethical evaluation skills allow students to bring ethical principles, concepts, theories, and values to bear on the problems they identify in research scenarios and use these to accomplish moral reasoning and judgment.
- Ethical integration skills give ethical principles, concepts, theories, and values a constitutive role in creating and designing solutions to moral problems and generating decision alternative sthat integrate moral (and non-moral) values.
- Ethical prevention skills are employed to identify value conflicts inherent in research projects and the socio-technical systems into which they are integrated. Prevention skills more from early identification of these conflicts to the development of counter-measures that prevent them from developing into full-blown moral problems or dilemmas.

These objectives form a series in which the more complex skills presuppose and build upon the simpler ones: ethical evaluation takes place when awareness skills are mastered; integraiton presupposes evaluation and awareness; prevention builds upon the mastery of the three more basic skills. To reflect this serial relation of ethics objectives, the graduate students workshops--each of which targets a particular skill set--are sequenced so that subsequent workshops build upon the skills mastered in

earlier ones. Those who adopt this module are cautioned against taking this idea of sequential development to its extremes. The sequence is not uni-directional; students can and should work on maintaining awareness even after they have practiced prevention. More than one skill can be pursued at a time. Students could take the workshops out of sequence and still benefit. But ordering these workshops sequentially and generally requiring students to move from awareness, through evaluation and integration, to integration makes enough sense to test this model.

References

- Kohlberg, Lawrence. 1981. The Philosophy of Moral Development: Essays on Moral Development, vol.1. San Francisco: Harper and Row.
- Pritchard, Michael S. 1996. Reasonable Children: Moral Education and Moral Learning. Lawrence, KS: University of Kansas Press: 11.
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Graduate Education in Research Ethics: Case Analysis Workshop

Module Introduction

In a third workshop, you will work with the moral objective of ethical integration which builds upon ethical awareness and ethical evaluation. Two widely used decision-making frameworks will be presented. Thus, using a case presented by a faculty mentor, students will practice the framework by bringing the case to a resolution. You will be provided with decision alternatives that respond generically to ethical problems (gather information, negotiate, oppose, exit, etc.), rank these generic solutions, and then design and justify a decision of your own. This workshop allows you to continue practicing the resolution of moral conflicts (skills developed in the second workshop) and, in addition, to work on integrating moral considerations with practical ones. The case analyses that you develop in this workshop will serve as a preliminary draft. Then you will form work groups that will continue to refine their provisional decisions, analyses, and justifications after the workshop. This will lead to the next activity where your group, along with others, will prepare a poster presentation on your case analysis to be presented in a capstond activity called, the "Graduate Research Ethics Banquet."

Objectives	**Activities**
Students learn to integrate ethical considerations in to the causistic model of case analysis	Presentation: Decision-making framework in research ethics based on casuistic model
Students learn to integrate ethical considerations into a rational decision-	Presentation: Decision-making framework in research ethics based on

making framework common in the business environment	rational decision model (sevel-step model)
Students learn to integrate ethical considerations (principles, concepts, theories, and values) into day-to-day decision-making in research activities	Reflection Exercise: Students are presented with scenarios that raise an ethical problem and create a decision point. Students then rank alternative solutions, choose an alternative, and justify their choice

Case Analysis Workshop

Module Activities

- During a presentation, you will learn about a decision-making framework based on the casuistic model.
- Those who work in a business context make use of a decision-making procedure based on a rational decision model. This framework breaks the decision procedure down into seven steps: (1) identifying the relevant facts, (2) stating the problem, (3) identifying the stakeholders and their stakes, (4) brainstorming solutions, (5) evaluating solution alternatives according to their ethics, (6) making a decision, and (7) identifying preventive measures to stop the problem from reoccuring.
- You will be assigned a decision point within case or scenario that raises an ethical problem. Your job is to generate alternatives, rank them according to their ethics, make a choice, and then justify that choice using ethical considerations.
- You will be divided into work teams. After the workshop, you will continue to refine your analysis and decision and prepare a poster that presents your final mature decision and justification. This will be presented in a subsequent activity, the "Graduate Research Ethics Banquet."

Module Objectives

This workshop series is based on four skills for ethical empowerment that have been detailed in Cruz/Frey 2003: ethical awareness, ethical evaluation, ethical integration and ethical prevention. This list of moral skills is by no means exhaustive or exclusive. For example, it does not cover moral imagination, moral creativity, becoming a member of a professional community, or perseverance. Readers are encouraged to consult the moral development skills that are available in Kohlberg, Rest, Huff/Frey, and the widely accepted Hastings Center List. Bibliographical references below will provide ample resources that different institutions or groups can use to build a list of skills of moral development to fit their needs and resources.

- Ethical Awareness consists of the student's ability to select and frame moral issues and problems that arise in ordinary, day-to-day research practice. Ethical evaluation skills allow students to bring ethical principles, concepts, theories, and values to bear on the problems they identify in research scenarios and use these to accomplish moral reasoning and judgment.
- Ethical integration skills give ethical principles, concepts, theories, and values a constitutive role in creating and designing solutions to moral problems and generating decision alternative sthat integrate moral (and non-moral) values.
- Ethical prevention skills are employed to identify value conflicts inherent in research projects and the socio-technical systems into which they are integrated. Prevention skills more from early identification of these conflicts to the development of counter-measures that prevent them from developing into full-blown moral problems or dilemmas.

These objectives form a series in which the more complex skills presuppose and build upon the simpler ones: ethical evaluation takes place when awareness skills are mastered; integraiton presupposes evaluation and awareness; prevention builds upon the mastery of the three more basic skills. To reflect this serial relation of ethics objectives, the graduate students workshops--each of which targets a particular skill set--are sequenced so that subsequent workshops build upon the skills mastered in earlier ones. Those who adopt this module are cautioned against taking this idea of sequential development to its extremes. The sequence is not uni-

directional; students can and should work on maintaining awareness even after they have practiced prevention. More than one skill can be pursued at a time. Students could take the workshops out of sequence and still benefit. But ordering these workshops sequentially and generally requiring students to move from awareness, through evaluation and integration, to integration makes enough sense to test this model.

References

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Graduate Education in Research Ethics for Scientists and Engineers: Graduate Research Ethics Banquet

Module Introduction

The capstone event in this series of graduate student activities is a Graduate Student Research Ethics Banquet. To prepare for this activity, interdisciplinary student groups organized in the Case Analysis Workshop will prepare poster presentations which will outline their solutions to the case or cases presented during the earlier workshop. Students from the research ethics course will also be invited to develop interdisciplinary gorups and submit posters. The posters will receive campus-wide publicity and will be displayed for a week at UPRM's Center for Ethics in the Professions, where students and faculty will carry out a preliminary evaluation. Then an evening banquet will be held where the groups will present their case resolutions to an interdisciplinary audience of faculty mentors and other graduate students. The student groups will justify their solutions and respond to questions and comments from participants. Upon completing this series of activities (three workshops plus the banquet) graduate students will receive a certificate from UPRM's Center for Professional Enhancement acknowledging their work in research ethics. The banquet's objectives and activities are presented in the table below.

Objectives	Activities
Students practice skill objectives of ethical awareness, ethical evaluation, and ethical integration in the context of preparing a poster presentation	Poster Preparation: Students prepare a poster presentation on their analysis and resolution of the case presented in the Case Analysis Workshop

Poster presentation display helps to disseminate efforts in integrating ethics into graduate research in science and engineering. Interaction with undergraduate students also helps to establish mentoring relationships.	Poster Presentation Displays: Students will present their posters and solutions to ethics cases before peers and faculty mentors. They will respond to comments and questions.
Graduate students receive reaction, feedback, and coaching from their faculty mentors and peers	Graduate Research Ethics Banquet: Students will present their posters and solutions to ethics cases before peers and faculty mentors. They will respond to comments and questions.
Students receive formal recognition of their efforts in research ethics	Graduate Ethics Certificate: Upon completion of the workshop series and banquet, students will be given a certificate in research ethics

Graduate Research Ethics Banquet

Module Activities

1. Poster Presentation: You will prepare a poster presentation based on the case you began to analyze in the previous, Case Analysis, workshop. Your presentation will provide a resolution of the problem raised in your case.
2. Poster Presentation Displays: Your group's poster will be displayed in UPRM's Center for Ethics in the Profession along with other poster presentations from other groups. Undergraduate students in science and engineering classes will view the posters presented in this forum and write informal reaction papers. Feedback will also be elicited from your teachers and peers.

3. Graduate Research Ethics Banquet: During a capstone activity, an ethics banquet, you will present your posters and solutions to the ethics cases you have been studying. Your audience will consist of faculty mentors and peers. During a dialogue between presenters and audience, they will ask questions and make suggestions/comments to which you will respond.
4. Graduate Ethics Certificate: When you complete this workshop series and banquet, you will receive a Certificate in Research Ethics.

Module Objectives

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GERESE--A Faculty Workshop

Note:

Introduction

On January 30, 2009, a workshop was held to assess qualitatively the NSF-funded project GERESE, Graduate Education in Research Ethics for Scientists and Engineers. (NSF 0629377) This module has the umbrella presentation introducing the different activities, a presentation on the theoretical and historical background of research ethics, presentations used in two student workshops, General Awareness Workshop and Moral Deliberation Workshop. At this stage, this module exists as a resource participants can use to access these workshop materials. At a later stage, it will be expanded to provide a toolkit other institutions can use for developing their own assessment workshops.

What you need to know …

What is GERESE?

- GERESE stands for Graduate Education in Research Ethics for Scientists and Engineers, an NSF-funded project in research ethic. An interdisciplinary team at UPRM is planning, testing and assessing a new framework for teaching Research Ethics which consists of the following components:
- series of workshops for graduate students
- separate activities for faculty development
- mentoring opportunities for faculty / students
- a new series of courses on Research Ethics
- Its final objective is to **foster and support ethical behavior and social commitment among researchers in Science and Engineering.**

What you will do ...

Workshop Agenda

- Identifying and Validating Research Ethics Issues in the UPRM Context
- Disseminating GERESE at UPRM
- GERESE Project Assessment: **How can project activities be used to address UPRM Research Ethics Issues?**
- Institutionalizing Research Ethics at UPRM: **What do we want to institutionalize in Research Ethics? How do we go about institutionalizing it?**
- Workshop Assessment

What did you learn?

Appendix

Agenda for GERESE--A Faculty Workshop
https://cnx.org/content/m19570/

Click on this media file to open the agenda for the January 30, 2009 to carry out project assessment for the GERESE prototype in Research Ethics.

Assessment Activities
https://cnx.org/content/m19570/

This figure contains a four-page worksheet with three assessment activities used to assess the

GERESE research ethics framework.

Workshop PowerPoint Presentation
Workshop Presentation
https://cnx.org/content/m19570/

This figure holds the presentation summarizing the content and activities of the GERESE-A Faculty Workshop activity held January 30, 2009.

Theoretical and Historical Background to Research Ethics
Theoretical and Historical Background
https://cnx.org/content/m19570/

This figure contains a presentation on the theoretical and historical background to research ethics to aid in an issue validation activity.

Workshop Evaluation Form
Workshop Evaluation Form
https://cnx.org/content/m19570/

Clicking on this figure opens the evaluation form

used to assess the overall workshop. If you failed to turn in a form at the end of the activity, please click, download, and return to the workshop organizers.

Presentation for GAW
Graduate Awareness Workshop
https://cnx.org/content/m19570/

This figure contains the presentation that formed the basis of a workshop in research ethics designed to create basic awareness of issues and approaches in this area for graduate students.

Mentoring and Outreach
Priming the Pump
https://cnx.org/content/m19570/

This figure provides a description of the outreach activity carried out in this project to bring research ethics to high school students in western Puerto Rico. Graduate students served as mentors to pre-

university students in the area of research ethics.

Moral Deliberation Workshop
MDW
https://cnx.org/content/m19570/

This presentation composes the core of a moral deliberation workshop, the second in a series of four workshops for graduate students in research ethics.

EAC ToolKit Project

This module is a WORK-IN-PROGRESS; the author(s) may update the content as needed. Others are welcome to use this module or create a new derived module. You can COLLABORATE to improve this module by providing suggestions and/or feedback on your experiences with this module.

Funded by the National Science Foundation: "Collaborative Development of Ethics Across the Curriculum Resources and Sharing of Best Practices," NSF-SES-0551779

Faculty Retreat in Research Ethics--Modules and Issues
This module is a derived copy of a module that supports faculty development workshops. It is developed in conjunction with the EAC (ethics across the curriculum) Toolkit. Faculty development workshops bring instructors and researchers together into interdisciplinary teams to tackle the important task of providing students in the occupational and professional areas with ethics education. These workshops allow faculty the time and opportunity to develop resources and materials that support EAC educational efforts. But capturing the experience and knowledge generated can prove challenging. Post workshop enthusiasm and commitment wear off wear off as time passes. This module sustains the developing EAC community by providing an online environment in which participants can continue to develop and share the products created in EAC workshops. The community built up out of the collaborations that take place in faculty development workshops is maintained by having participants continue their collaboration through the testing, refining, and sharing of EAC modules and best practices. This module has been developed as a part of a project funded by the National Science Foundation, "Collaborative Development of Ethics Across the Curriculum Resources and Sharing of Best Practices," NSF-SES-0551779.

Issues Identification Activity in Research Ethics

On November 29, 2007, the GERESE team (Graduate Education in Research Ethics for Scientists and Engineers) held an issue identification workshop to identify and rank key issues in research ethics at the University of Puerto Rico at Mayaguez. Workshop participants discussed scenarios in research ethics. A brainstorming session led to a large unrefined list of issues. To pare this down and rank the remaining issues, participants were given stickers that were assigned different numerical values. They voted their preferences by placing their stickers on the issues they valued the most. The raw score on each issue was then tabulated. The following table lists the issues and their rankings.

Issue	Votes
Plagiarism	50
Scientific Rigor	45
Authorship	32
Record Keeping	25
Misrepresenting Expertise/Competence	24
Power Disparity	21
Stealing Ideas (Robo de Ideas)	20
Amiguismo (Showing undue partiality to friends)	17

Research Ethics Issues At UPRMThis table shows research ethics issues at the University of Puerto Rico at Mayaguez as identified and ranked by representative faculty members.

Retreat Agenda (Translated into English)

Mini Conference on Research Ethics For GERESE Project (NSF 0629377)

Friday August 28, 2009

5:00 PM	Welcoming and Presentation of Retreat Program and Project
5:30	Integration Exercise (Pirate Code of Ethics)
6:30	Dinner
7:30	K-12 Outreach (Presentation)
8:00	Presentation on Freestanding Research Ethics Courses

Saturday August 29, 2009

7:30 AM	Breakfast
8:30	Presentations on Workshop Series (GAW, MDW, CAW, and Banquet)
10:00	Break with Poster Presentations
10:30	Presentation on Case and Module Development
10:45	Cases prepared in Breakout Groups
11:15	Groups debrief to Plenary on Cases
12:00	Lunch
1:30 PM	Presentation on Global Results of GERESE Project
2:00	Groups break out, discuss project, then provide assessment
3:30	Closings, Evaluations, and CoffeeGERESE Faculty Retreat Agenda

Retreat Agenda (In Spanish)
https://cnx.org/content/m32949/

Clicking on the media file just below opens the presentation used for faculty development workshops held at UPRM. One such workshop was held February 20, 2009 with participants from UPRM, UMET, Polytechnic, and Interamerican Universities. The second workshop, scheduled for October 23, 2009 at UMET was canceled and will be rescheduled for January 2010. This presentation helps participants visualize the four parts of the Toolkit faculty development workshop: issue identification, demonstrations of successful EAC interventions, creation of new EAC interventions, and sharing new EAC interventions with the EAC community.

EAC Workshop PowerPoint
https://cnx.org/content/m32949/

EAC Module Demonstrations (In Research Ethics)

During the GERESE retreat, two EAC module demonstrations helped participants visualize EAC micro-interventions. The Case Analysis Workshop gives graduate students an opportunity to practice decision making frameworks and ethical concepts through the analysis of cases in research ethics. Two cases were highlighted. "The Contaminated Lot," developed by Carlos Rios and Luis Rios, presents students with a core scenario and then adds layers of complexity to prepare them for the gray-colored situations often presented in the real world. The other case, the Dr. Swift case, was developed through the University of Oklahoma's Center for Applied Social Research. This case (a "Rashomon-Type Case" because the events were not presented through a single "privileged" narrative but through six different participant-generated narrative perspectives) helps students practice and develop moral imagination. Along with these demonstrations, participants were provided with suggestions on how to choose, write, and teach case studies and how ethics micro interventions could be built up from the different ways in which case studies can be taught.

Presentation on Case Writing and Teaching in Research Ethics

https://cnx.org/content/m32949/

Layering in Complexity: An Example

- **Title**: The contaminated lot case
- **Start with simple situation as core**: You work for an industrial pharmaceutical company. Just before the shipment you discover a contaminated lot. What should you do?
- **Add layers of complexity**: (a) Low risk of getting caught. (b) High risk that someone could be harmed by contamination. (c) Pointing out the contamination would cause further delays in product delivery. (d) You could get fired, (e) Your daughter is sick and needs your medical plan.
- These cases allow students to make the transition from comparatively black and white cases to gray cases. Building in complexity is a good pedagogical strategy and helps prevent student skepticism.

Rashomon-Type Cases

- **Morally conflicting situation described from multiple participant standpoints (no single narrative to work from)**.
- **Example**: A graduate student claims that the most recent publication by her thesis adviser includes information based on the research she did in preparing her thesis. She asks to be added as co-author or, at the very least, be acknowledged for her contribution. Her adviser disagrees claiming that her thesis research was far more basic than what had been reported in the journal article. The department director holds an inquiry to investigate her allegation. (This is a variation of the Swift Case.)
- The six participant narrative include testimony from (a) the graduate student making the complaint, (b) the graduate student's thesis adviser, (c) two other graduate students one in favor of the graduate student's complaint, the other opposed, and (d) another professor in the same department who has had the graduate student in class. The department director listens to the different participatory narratives and makes a decision.

A Case Writing Checklist (From Davis)

- Is the story line clear?
- Does the scenario present a realistic situation?
- Does the case contain the right amount of information?
- Does the case raise issues appropriate and relevant to your class?
- Will the case be interesting to your students?
- Spend time clarifying what you want to achieve with the case?
- Adapted from Michael Davis, Ethics and the University, 173

Case Analysis Workshop Presentation

https://cnx.org/content/m32949/

Workshop Products

- During this workshop, you will participate in demonstrations of successful EAC modules that have been developed by participants in past EAC workshops. This demonstrates that successful ethics interventions are possible (because people like you are already doing it), that it can be integrated into a crowded curriculum (because you and your colleagues are doing it without sacrificing course content), and that occupational and professional teachers like you can become empowered to be ethics mentors to your students.
- Below are tables for you to enter the results of your work during this workshop. In table one, we will add your name and the module idea you shared with us. Space will be left for a link to the site at which you publish your module after further development and testing. We encourage you to publish

your module in Connexions so that we can link directly to it by way of the module's identification number.
- In table two, we will use the results of the EAC Pre-Workshop Survey to develop a matrix that outlines your goals in ethics and ethics pedagogy. Your job is to refine the matrix (you may want to restate some of the goals and add others) and fill in the cells with the modules you started during the workshop and other modules you and your colleagues develop. In this way, you can document how your teaching activities respond to your goals and use these goals to guide you in the development of new teaching activities.

Group	Module Idea Summary	Link (Upon Publication)
Group One	Juan del pueblo es un desarrollador de sistemas de bases de datos y trabaja para una compañía. Se le solicita diseñar un programa para encontrar la edad típica y el género de las personas que se accidentan en las noches. Este producto se le va a vender a fabricantes de autos para utilizarse en el diseño de vehículos y a las compañías constructoras de carreteras. Rosita de 55 años se va ha comprar un nuevo auto y el dealer trata de venderle uno de los modelos mas seguros, ella se siente estigmatizada por la presión del vendedor. Siente que no puede comprar el auto que quiere.	(Link)
Group Two	Titulo: Desarrollo propuesta interdisciplinaria “La imaginación moral en estudiantes graduados” Participan 7 profesores (dos ingenieros, un matemático, un administrador, un biólogo, un psicólogo). En la ultima reunión se ausenta el psicólogo y se sustituye por otro psicólogo. La propuesta se aprueba con 10 millones. Nuevo psicólogo esta perdido y le pide orientación al anterior. El psicólogo anterior, no sabia que la propuesta había salido. El psicólogo actual, no sabia que había un psicólogo anterior. Se cuestiona el proyecto interdisciplinario.	(Link)
Group Three	Un nuevo estudiante graduado “Bill gates” le propone a su profesor su propia idea para una investigación y le manifiesta que posee financiación. Puede el profesor servir a Bill como consejero? El profesor esta recién nombrado y necesita fondos. El tema de Bill, no es de la misma área de experiencia que el profesor. El profesor ve la oportunidad para avanzar en su propia agenda.	(Link)
Group Four	Medico especialista, investigador clínico afiliado a institución académica. Solicita fondos a NIH como PI para estudiar el desarrollo de un medicamento para una condición medica. El PI es a su vez consultor y accionista de la farmacéutica interesada en el producto y la cual a paleado fondos para la investigación. El producto se mercadea y el PI se beneficia por encima de la reglamentación y no informa su situación a las autoridades	(Link)

	académicas y gubernamentales. El PI fue electo director de una organización profesional.	
Group Five	Estudiante graduado va a defender su tesis. El instrumento principal para coleccionar los datos fue traducido y posteriormente aprobado por el IRB. Una semana antes de la defensa el representante de estudios graduados identifica un problema, el instrumento fue traducido y utilizado sin la autorización de su autor. El representante observa que el estudiante es ignorante sobre la acción tomada. El estudiante es extranjero, su estado económico sin fondos y su visa tiene fecha próxima para salir de la isla. Que deben hacer el representante, el estudiante y el comité?	(Link)
Group Six	Estudiante toma ritalin para mejorar su memoria. Muchos estudiantes hacen lo mismo. Dilema: Tomo ritalin y mejoro mi nota y memoria o me abstengo y mantengo mi capacidad mental.	(Link)
Group Seven	Contratando un científico: Existe una plaza abierta para investigación. Un proyecto corriendo que incluye un post-doc en el equipo. Se hace el llamado para la posición. Se debe abrir realmente la convocatoria. Se debe dar el cargo al post-doc.	(Link)
Group Seven	El examen final de un curso de arte incluye la creación de una obra de arte original. Una vez entregada el profesor del curso retiene la pieza para si.	(Link)
Group Eight	Case to be added later	(Link)

Modules developed during GERESE RetreatThese module drafts were develop by faculty teams participating in a retreat on research ethics held in Rincon, Puerto Rico on August 28-29, 2009.

Module Authors (By Group)

- **Grupo 1**: Caso preparado por: Carlos Acevedo, Felipe Martínez, Manuel Rodríguez, Anand Sharma, Keith Wayland
- **Grupo 2**: Caso preparado por: Lilian Gaya, Luís Godoy, David Lorenzo, Luís Rivera, Rafael Rodríguez (Caso de plagio)
- **Grupo 3**: Caso preparado por: Luís Avilés, Dana Collins, Agustin Irizarry, Chris Papadopoulos, Jaime Seguel (Conflicto de interés)
- **Grupo 4**: Caso preparado por: Ernesto Frontera, Eduardo J. Juan, Carlos Rinaldi, Sandra Zapata (Conflicto de interés)
- **Grupo 5**: Caso preparado por: Celia Colón, Raúl Macchiavelli, Javier Quintana, Paul Sundaram (Plagio)
- **Grupo 6**: Caso preparado por: Ángel González, Ricardo López, Brian Munoz, Clara Valderrama
- **Grupo 7**: Caso preparado por: Nilda Aponte, Mercedes Ferrer, Harry Nieves Barner
- **Grupo 8**: Caso preparado por: Canny Bellido, José Cruz, Héctor Jiménez, Aidsa Santiago (Autoria)

Group Name	Module Summary	Link (Upon Publication))
Group One	An automobile company study shows that older women are least likely to have an accident at night driving brand X. When Rosita, 55 years old, tries to buy a new car, the company's dealer pushes brand X. Is this discrimination based on Rosita's age and sex?	(Link)
Group Two)	An interdisciplinary faculty team has worked hard on developing a 10 million dollar proposal. The psychologist on the original team is unable to make the final meeting where the proposal is finalized. She is not able to sign off on the project. The psychologist who substitutes for her is not up to speed on the project. Seven participants (two engineers, a mathematician, an administrator, a biologist, and the substitute psychologist) each argue for or against sending off the proposal anyway.	(Link)
Group Three	A graduate student, Pedro Sevilla, has a better idea for a research topic. The idea, readily marketable, already has financial backing. He asks Professor Tenureless, a new professor anxious to document research success for promotion, to be his advisor. Even though this is outside of Tenureless's area, he considers advising Sevilla to pack his curriculum vitae.	(Link)
Group Four	A medical specialist a clinical researcher affiliated with an academic institution, receives funds from the NIH to develop and test a new medicine, Cureall, for treating disease X. Her work shows that Cureall successfully treats X. Drug$ Inc. secures the patent for Cureall and generously compensates the medical specialist for her research. She neglects to inform the NIH of this. She is also elected director of a professional academic organization based on her contribution to clinical research.	(Link)
Group Five	A gradate student is about to defend her thesis. The principal instrument she used for collecting data was translated from a document previously approved by the IRB. One week before her defense the representative from gradate studies identified a problem with the instrument she translated and used without authorization from the author.	(Link)
Group Six	A students takes Ritalin before an exam to improve his memory. Because it works, his friends have started taking Ritalin. Now those not taking Ritalin face a dilemma: either they must compete unfairly with their drug-enhanced peers or start taking Ritalin themselves.	(Link)
Group Seven: Case One	A research position has just opened up. The head investigator faces a difficult decision. Does she conduct an impartial, open,	(Link)

	and fully publicized search for a qualified candidate or hire the post-doc currently working on the team?	
Group Seven: Case Two	The final exam of an art course includes the creation of an original work of art. Once turned in, the professor of the course keeps the original work for himself.	(Link)
Rashomon Case by Frey	A graduate student feels that she has contributed, through her dissertation, significant research to a paper that her adviser has recently published. Her adviser disagrees. Create a hearing where the student makes her case, the adviser his, and other students also sound in.	(Link)

English Translation of Retreat IssuesThis is a rough summary in English of the module ideas developed in the GERESE retreat held in Rincon, Puerto Rico on August 28-29 2009

Names	Module Idea Summary	Link (Upon module publication)

Individual EAC Module IdeasThis table summarizes individual module ideas. Eventually authors will expand these ideas and share them online by publishing them in the Connexions Content Commons.

	Plagiarism	**Scientific Rigor**	**Authorship**	**Misrepresenting Competence**	**Power Disparity**
Pushing Cars				(X)	
Missing Psychologist		(X)			
Tracking on Tenure			(X)		
Stairway to Success	(X)		(X)		
A Student Looking for					(X)

Recognition					

EAC MatrixThis table outlines a Matrix where modules are matched with the EAC issues or goals they respond to. It will allow you to document successes in your EAC program (those issues your modules match) and outline areas for improvement (those issues for which you need to develop new modules).

Workshop Evaluation

Workshop Evaluation in Spanish

https://cnx.org/content/m32949/

Clicking here will open the workshop evaluation form as a Word file. We appreciate your feedback.

Ethics Module Incubator

During the retreat, participants were asked to write their module and case ideas on a three by five note card. The following table displays the results. The first column presents the module idea, the second the research ethics issues touched upon by the idea, and the third enlists those who want to champion the idea and turn it into a full blown module.

Module Idea(1,1)	**Issues Covered**(1,2)	**Module Champion**(1,3)
Un estudiante trabaja en un proyecto de investigación y al final de su trabajo encuentra un artículo que desarrolla mucho de lo que él había hecho. (el trabajo se hizo sin conocimiento del articulo)	Authorship and Robo de Ideas (?)	(2,3)
Copiarse los trabajos y aceptarlos sin verificarlos (Profesional)	Plagiarism	(3,3)
Uso de auto de gobierno para uso familiar(4,1)	Misuse of Government Property	(4,3)
Una profesora exige que sus estudiantes escriban capítulos de un libro. Posteriormente ella se queda con los derechos de autor	Authorship and Plagiarism (?)	(5,3)
Estudiante graduado solicita la colaboración de un profesor de estadística para evaluar los datos de su tesis. Al evaluar los datos el profesor se da cuenta que hay parte de los datos dudosos. El estudiante es conciente de esto, pero no se anima a confrontar a su profesor.	Power Disparity (disagreeing with authority)	(6,3)

Realizar investigación en una tecnología que se entiende puede ser usada en contra del ser humano.(7,1)	Misuse of Research and Social Responsibility	(7,3)
Uso de instrumentos en otro idioma sin documentarlos	Poor Record Keeping	(8,3)
Usar el material de Internet (manual de laboratorio) para la redacción de un informe de laboratorio, sin presentar la referencia (Plagio)(9,1)	Plagiarism	(9,3)
Peer review. Un autor somete un artículo a una revista científica aceptando que no permite sometimientos múltiples. Su revisor analiza el manuscrito y aceptando que no compartirá información fuera de su comunicación con el editor casi simultáneamente. El revisor recibe el mismo articulo para revisión proveniente de dos editores de dos revistas diferentes. Que debe hacer?(10,1)	Authorship	(10,3)
Un estudiante graduado necesita ayuda para completar una investigación. Un amigo le ayuda, el estudiante original no le da el crédito y presenta el trabajo final como suyo, sin acreditar la ayuda recibida(11,1)	Plagiarism, Robo de Ideas, Amiguismo	(11,3)
Una agencia de gobierno le pide contribuciones voluntarias a sus suplidores habituales.	Conflict of Interest and Power Disparity	(12,3)
Te invitan a un panel a evaluar propuestas de investigación. Te das cuenta que una o dos propuestas plantean ideas similares a las que tenias en mente para propuestas.	Plagiarism and Robo de Ideas	(13,3)
Debo aceptar un estudiante graduado en mi grupo de investigación por el mero hecho de que este tiene su propio “funding” irrespectivo de si estoy interesado en sus ideas de investigación, preparación académica, etc?	Misrepresenting Expertise	(14,3)
Un consultante es invitado a resolver un problema de manufactura en el desarrollo de un medicamento. En su colección de los datos el nota un problema en el proceso de manufactura del medicamento el cual puede afectar a los pacientes que usan ese medicamento. El presenta un reporte a la compañía indicando la seriedad del problema. La compañía toma una decisión al respecto.	Possible Dissent, Power disparity, and Record Keeping	(15,3)
Un profesor escribe una propuesta usando el nombre de otro miembro de la facultar. Después de ser adjudicada	Authorship	(16,3)

el profesor no informó y el miembro de la facultad redirigió los fondos para él.		
Estudiante promedio que quiere obtener calificaciones altas para continuar sus estudios graduados tiene conexiones con profesores y no viene a los exámenes en las fechas propuestas para todos los alumnos. Todo con el fin de tener mas tiempo y obtener un GPA alto.	Power Disparity and Misrepresenting Expertise	(17,3)
Enfermera al cuidado de niño de 8 anos que tras accidente cae en como profundo y genera una muerte cerebral. Usted sigue su cuidado por aproximadamente 6 meses. Durante el cual desarrolla una relación con la familia. Basada en la relación la madre le pide ayuda para convencer al padre que no mate al niño “porque existen milagros”, el padre le pide lo ayude a convencer a la madre que lo deje morir para que tenga una muerte digna u no siga sufriendo. Los médicos le piden que convenza a los padres para que donen los órganos del niño.	Role Responsibilities of Nurses	(18,3)

Ethics Module Incubator

`Research Ethics Pre-Test`

https://cnx.org/content/m32949/

`This Word file adopts the retreat scenarios into a pre-test format to help gauge student attitudes at the beginning of the semester.`

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EAC ToolKit Project

This module is a WORK-IN-PROGRESS; the author(s) may update the content as needed. Others are welcome to use this module or create a new derived module. You can COLLABORATE to improve this module by providing suggestions and/or feedback on your experiences with this module.

Funded by the National Science Foundation: "Collaborative Development of Ethics Across the Curriculum Resources and Sharing of Best Practices," NSF-SES-0551779

Ethical Issues in Graduate Research

(Caution! This module is being published in an incomplete, preliminary version. Later edited and fuller versions will follow.) "Graduate Education in Research Ethics for Scientists and Engineers" is a project funded by the National Science Foundation (SES 0629377) to design a pilot program in research ethics for graduate students in science and engineering. This project is built around three workshops: (1) a Graduate Awareness Workshop introduces students to fundamental ethical issues in research, (2) a Moral Deliberation Workshop acquaints students with the skills of moral deliberation, (3) a Case Analysis Workshop uses realistic scenarios to allow students to practice decision-making an problem-solving in research ethics, and (4) students present their decision-making and problem-solving skills in a capstone activity, an Ethics Banquet, that consists of poster presentations on cases in research ethics. This module is a derived copy of the first workshop, the Graduate Awareness Workshop, written for business administration students or students in the professional and occupational areas who will be doing research in a market-driven environment. It links to the Open Seminar project, also funded by the NSF, which provides exercises, modules, activities, and resources pertinent to the study and teaching of research ethics. It also works closely with the Belmont Report, a wonderfully concise document that offers principles and practical applications designed to undercut the paralyzing theoretical and ideological debates that often accompany an area like research ethics. This module has been developed through Connexions as a part of the EAC Toolkit project, NSF SES 0551779.

Module Introduction

Graduate Awareness Module

This module presents the ethical issues and concepts associated with research in graduate school. Its content and exercises focus on business research, that is, research carried out in business organizations and research carried out in graduate programs in business schools. You begin with three cases: Tuskegee, Enron, and Baltimore. The first establishes the need for research ethics. The second introduces complexities that market-driven activities bring to research. The Baltimore case poses the question, not of whether market forces distort and deflect scientific research, but of whether

government and legal forces conspire to distort and deflect the exercise of scientific research skills. After looking at these cases, you will examine the Belmont Report and the basic moral principles and responsibilities in research ethics that it clearly outlines. These principles stand up remarkably well when carried to the realm of business; but there is still a sense in which they need reformulation and clarification to become operative in the context of the different moral ecologies provided by business. Third, you will apply the principles of the Belmont Report to famous (and notorious) research carried out in social psychology on obedience to authority. In a role-playing activity, you will imagine that you are a member of an IRB (Institutional Review Board) charged with evaluating Milgram's research proposal that justifies the experiments he is about to carry out to generate information on how far normal individuals will go, against conscience, on the basis of authority. Someone role-playing as Milgram will present the experiment's protocol, estimate the damage it will bring to the participating human subjects, and outline the expected results. You will use the principles of respect, beneficence, and justice as outlined in the Belmont Report to evaluate Milgram's proposal and decide if the experiment, as outlined, should take place. Finally, you will have a chance to reflect on a series of issues that arise in research carried out in the area where markets, technology, and government intersect. How does competition drive, direct, and even detect research? Does the profit motive distort or corrupt research results? Do markets motivate, filter, or deflect research and progress in scientific and technological research? Can undue or excessive interference by the government undo research efforts?

Get Started--Take the Pre-Test

This pre-test in research ethics—not really a test—consists of short scenarios accompanied by three questions: (1) Is it ethical? (2) Is it common or realistic? (3) Is it controversial? Answering these will help you to start thinking about research ethics issues. On some scenarios you will agree with your classmates and teacher. On others you won't. Try using three simple ethics tests (reversibility, harm-benefits, and publicity) to provide more common ground upon which to build consensus. And don't despair. Coming to a thoughtful agreement on ethical issues is difficult but well worth the effort.

Research Ethics Pre Test

https://cnx.org/content/m31972/

Clicking on this figure will open the Research Ethics Pre Test. It consists of a series of short scenarios designed to get you thinking about some of the ethical issues you will encounter during your graduate studies.

GERESE Research Ethics Pre Test
https://cnx.org/content/m31972/

Issues Table
https://cnx.org/content/m31972/

Syllabus for Business Government Society
https://cnx.org/content/m31972/

What you need to know

The Tuskegee Study

- Those horrified by the experiments carried out by Nazi scientists and doctors on defenseless concentration camp prisoners were placated only by the reassurance that “it couldn’t happen here.” (“Here” for the purpose of this module would be the United States, including Puerto Rico.)
- News stories published in 1972 detailing the Tuskegee experiments carried out in Mississippi soon displaced this consoling belief. As it turned out, not only could these things “happen here” but had been happening here for forty years.

- Inaugurated in 1932, the Tuskegee study examined the long terms effects of the disease syphilis in Black men. Even though penicillin was widely used (and successfully used) as a treatment for this disease, such treatment was withheld from the experiment's subjects to allow it to go to its logical and biological conclusion.
- The experiment continued until 1972, when Peter Buxtin with the U.S. Public Health Service (the agency sponsoring the experiment) blew the whistle on the experiment to reporter Jean Heller. According to Wikipedia, “[B]y the end of the study in 1972, only 74 of the test subjects were alive. 28 of the original 399 men had died of syphilis, 100 were dead of related complications, 40 of their wives had been infected, and 19 of their children had been born with congenital syphilis.
- The outrage generated by this study led to the formation of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. This commission wrote the widely known and respected Belmont Report, summarized below, that outlined the moral status, considerability and rights of human subjects in the context of scientific research. It developed protocols to recognize and respect these moral considerations and rights by requiring that those conducting publicly funded research have their research proposals reviewed by Institutional Review Boards.

This short profile on Tuskegee has been compiled with materials taken from Wikipedia (http://en.wikipedia.org/wiki/Tuskegee_syphilis_experiment) and the Western Michigan Website on ethics linked above (http://www.wmich.edu/ethics/old-site/ESC/cs3.html) both accessed March 15, 2011. Jorge Ferrer also discusses the Tuskegee case in **Deber Y Deliberacion: Una Invitacion a la Bioetica**, Mayaguez, PR:CePA.

The Enron Case

- Enron hardly seems appropriate for a module in research ethics. It has been presented as a cautionary tale of what happens to Harvard Business School Graduates who give smart alec remarks during student interviews. (Jeffrey Skilling, when asked if he was smart, supposedly replied, "I am f___ing smart." The moral of this cautionary

tale: don’t be arrogant and hubristic or you will be brought down and humbled like Enron’s “smartest guys in the room.”)

- This is good advice but it only gets us started toward a more profound appreciation of the moral complexity of this case. For example, Malcolm Gladwel distinguishes between a puzzle and a mystery and asks which one applies to Enron.
- A puzzle requires more information if it is to be solved. If a puzzle cannot be solved, then it is because someone is withholding crucial information. In determining Skilling's punishment and jail sentence, many testified that Skilling withheld crucial financial information from them pertinent to Enron's pending failure. He sold Enron stock but they didn't because they didn't have the inside perspective. They could have solved the Enron puzzle (and sold their stock before it crashed) had they been able to access the same information available to Skilling.
- But if Enron is a mystery, and Gladwell more than hints at this possibility, then it doesn't require more information to be solved. Rather, it requires intelligent and skilled financial experts to study, structure and frame the information already out and turn it into a coherent story. (Intelligence experts are trained to do this by interpreting the chatter that goes on between terrorists to try to build a picture of whether they are planning an attack.) The students at Cornell university studied information publicly available on Enron. On the basis of this (and not cloak-and-dagger investigative reporting), they recommend selling Enron stock because it was overvalued. For them Enron was a mystery. All it needed was for someone to pour over all the information available and tell a coherent story.
- This is important to research ethics because much of research in business falls in one or the other of these categories. Furthermore, responsibility is assigned differently depending on whether the situation offers a puzzle or a mystery. If Enron was a puzzle, then Skilling, Lay, and Fastow were likely guilty of a cover-up. If Enron was a mystery, then the blame falls on those who should have been able to put together the story of Enron's failure based on the information already available.

Enron Exercise

1. Give an argument on why the Enron Case is primarily a puzzle. How did Skilling, Fastow, Lay go about covering up the vital information?
2. Given an argument on why the Enron is primarily a mystery. If the information was already out there, why were financial experts unable to see it? What was the story they should have put together to make sense of the information already publicized?
3. In working toward your answers to 1 or 2, consider whether energy futures, mark-to-market accounting, and Special Purpose Entities were financial devices or tools that were be put to good use. (Could they be treated, for example, as value-neutral technologies?)

Eight Important Points to Enron Case

1. Houston Natural Gas merges with InterNorth to become Enron. This takes place in 1985.
2. The Valhalla Scandals nearly did Enron in early in the career of both Lay and the corporation. Enron. Maverick traders risked everything on a series of shaky deals. Muckleroy, former Enron official, out-bluffed the market to ride out the financial crises.
3. Lay formulated an exciting new idea: trading energy futures, that is, deregulating the energy market and trading energy futures in the same way that agriculture futures are traded. To bring about deregulation in the energy market, Kenneth Lay became a formidable Washington lobbyist who benefitted from close ties to the Bush family (President George H. W. Bush and President George W. Bush). (Take some time to think about some of the free-market arguments that Lay made to convince government agencies to de-regulate the energy market.)
4. Lay hires Skilling who at the time was an adviser for the McKinsey group. Skilling was brilliant (called "incandescently brilliant by admirers), a Social Darwinist (distinguish Darwinist from Social Darwinist), and a risk taker. While these were admiral qualities in some contexts they ultimately failed Skilling in his work with Enron? (Why? What does Bethany McLean mean by characterizing Enron and Skilling’s role in the events that unfolded, as a tragedy? How does this compare with Greek tragedies like Oedipus and Antigone?)
5. Enron develops "creative" accounting methods. Mark-to-market allows them to declare future earnings expected from a project at the moment

the deal is made. While good in the short term, this method quickly put Enron on an accelerating treadmill: to maintain the illusion of profitability they had to keep making deals and declaring up front expected profits. Enron also used Special Purpose Entities to distribute risk and secure needed loans at low interest rates. SPEs were artificial corporations endowed with Enron assets like gas pipelines and energy contracts. These assets made it possible for Enron to get low interest loans and generate need cash flow. The problem was that Enron used its stock to guarantee the loans given to the SPEs. Thus, Enron had to continually make deals to appear profitable to keep its stock value rising, and we're back to the accelerating treadmill.

6. Enron took on the identity of an "idea" company. They saw themselves as a laboratory where ideas were generated by creative and brilliant people and then realized in the real world through deals made by deal-makers like Cliff Baxter and Rebecca Mark (who made the Dahbol power plant deal). Examples of ideas include Enron Broadband, the Dahbol, India Power Plant, and energy futures.
7. It is now common knowledge that the California energy crises (which led to the recall of governor Gray Davis and the election of Arnold Schwarzenegger) was created by Enron traders. (The book and documentary, "The Smartest Guys in the Room," provides a convincing case for this including scary conversations between Enron traders that were tape recorded and later replayed before Congressional Committees.) Matters were worsened when Jeffry Skilling compared California to the sinking ship, Titanic; they were the same (both disasters), except for the fact that the Titanic's lights were still on when it went down. (His punishment: a pie in the face thrown by an angry California energy consumer.)
8. While Enron's rise took place gradually over fifteen years, its fall was spectacular and rapid. This lends credence to the claim that Enron was a house of cards, more appearance than solid reality.

Enron Cautionary Tales

- Enron Broadband (as well as the Dot.Com corporations that failed at around the same time): Promising technological projects turn out bad when the values embedded in the technology conflicts with those

embedded in the surround socio-technical system. (See the module on socio-technical systems for more information.)
- Why did Dahbol work? (Dahbol, the failed India power plant, is the second cautionary tale.) Local opposition, misfit of technology with surround STS, and poorly thought-out transfer of technology all contributed. A commentator in the documentary remarked how India is a bad place to build good technology. But another case detailed in the article, "People's Science in Action," shows how another energy projected succeeded through a participatory design strategy. Those in Puerto Rico may reflect on whether there are lessons to be learned both from the failed Dahbol plant and the successful Uchangi dam in the Maharashtra state. (Witness current opposition to building a windmill farm in Guanica.)
- Are financial and accounting tools like mark-to-market, financial risk distribution tools, (collateralized debt obligations and credit default swaps), and SPEs inherently bad or harmful? Can we treat financial and accounting tools as technologies? (Not value-neutral, fit or don't fit with underlying STS, exhibit a trajectory...).
- These cautionary tales show how Enron issues overlap with research ethics and ethics of technology issues.

Materials and profiles on Enron are based on McLean and Elkind, **The Smartest Guys in the Room**. Complete reference below. Malcolm Gladwell's **New Yorker** article on Enron (see complete reference below) provides a full discussion of the relevance of the distinction between puzzle and mystery to this and other cases.

Baltimore Case

The Baltimore Case: A Rasamon Approach

- **When Margot O'Toole was unable to duplicate research scientist Thereza Imanishi-Kari's observations, she first supposed that it was due to her lack of expertise. But repeated failures (and brusque treatment by Imanishi-Kari) led her to think otherwise. O'Toole blew the whistle on Imanishi-Kari and on the project**

leader, David Baltimore (a Nobel prize winner) leading to an NIH investigation and a Congressional hearing led by Representative John Dingell. Initially found guilty of fabrication by the National Institute for Health, Imanishi-Kari was cleared of all charges of fraud in the form of fabrication in 1996.

- You are **David Baltimore**, a Nobel Prize winner in biology in 1975 for groundbreaking work in virology. Now your interests have turned to immunology. The study of the production of antibodies (substances in the body which defend against disease) in mice have led you to partner with promising young researcher Theresa Imanishi-Kari, an expert in serology. Together with David Weaver and Imanishi-Kari, you have co-authored a paper published in the well-known journal, **Cell**. Now Imanishi-Kari stands accused by one of heer post-doctorates of fabricating some of the data used in this article. You stand by her research; she may have been sloppy in some of the documentation but her work has always been solid in the past. Outline and defend your intention to stand by Imanishi-Kari and the conclusisons you, her, and Weaver have published in **Cell**. How do you respond to those who accuse you of bullying O'Toole?
- Your name is **Margot O'Toole**. You are a post-doc researcher in biology and have been working in a laboratory supervised by Teresa Imanishi-Kari. Recently you and Imanishi-Kari have become more and more estranged. First, she makes unrealistic demands of you in terms of devotion to research. You are a mother and a wife and don't want to sacrifice these responsibilities to your academic career. You also have a Ph.D. in biology with good recommendations from past teachers and mentors, you are unable to duplicate Imanishi-Kari's experimental results. Because she grew up in Brazil and her family is Japanese, English is her third language; at times you find it difficult to understand her and follow her directions. She is also blunt to a fault. She has told you that you don't have the skills to make it as a researcher. You disagree. The problem is not with your research skills but with Imanishi-Kari's sloppy methods and documentation. Furthermore, you suspect her of having fabricated some of her data, especially when you see discrepancies between the data you found in her notebooks and the data she reports in the Cell article. Taking these concerns to Imanishi-Kari is out of the question given your recent

estrangement. But other team members, including Baltimore, have also proven unreceptive to your concerns. In fact, MIT's investigation has been nothing if not perfunctory. Should you blow the whistle? To whom? Outline your concerns, develop a course of action, and justify it. How do you respond to those who have labeled you as a trouble-maker on the basis of their interpretation of your past work and studies?

- Your name is **Theresa Imanishi-Kari**. You are a promising young researcher born in Brazil of Japanese parents. English is your third language; sometimes those who work under you have trouble understanding your instructions and even your supervisor and mentor, David Baltimore, has to take pains to make sure he has successfully communicated with you. You have been asked by Baltimore, a Nobel Prize winning biologist, to work with him on a study into how the immune system produces antibodies. Your specialty is serology. Your work is difficult, painstaking, requires extensive documentation, but years of hard work have begun to pay off with interesting--even surprising--results. Now you find out that one of the post-doctorates under your supervision has accused you of fabricating data. MIT, your home institution, has just completed an internal investigation and has found nothing improper. But the NIH has begun a much more intensive investigation where they have asked you for your laboratory notebooks and have begun to question you on discrepancies between what you have recorded there and what you report in the Cell article. While Baltimore has stood by you so far, he is under increasing pressure to denounce you and your research. The situation with O'Toole, the Post-Doc accusing you, is incomprehensible. She understands the basic concepts of your research but lacks the practical skills required by a good researcher. She has been unable to duplicate your results because she lacks the necessary skills; her accusations arise out of her refusal to acknowledge her own limitations. You have made her aware of this, bluntly to be sure, but you believe it is better to be open and direct with people. Now you have to defend your actions in the context of an increasingly politicized investigation. Outline your position. Defend your research against the accusations of O'Toole and the NIH. Discuss the demands of research documentation, the

complexity of your experiments, and the need for science (and scientists) to function without undue public and government scrutiny.
- You are **John Dingell**, Congressman from the state of Michigan. You see yourself as a crusader, a defender of the little-guy, and upholder of justice in the face of corrupted and powerful vested interests. The community of practicing scientists is your next target. Scientists compete ruthlessly for millions of tax dollars to set up their labs and carry out their research. They have a responsibility for conducting their research and upholding the pubic trust while maintaining the highest standards. Now you have become aware of a specific case of scientific fraud, a case of fabrication of data to maintain a well-funded scientific project. A brave young woman, Margot O'Toole, has tried to bring this problem to the attention to the faculty at MIT but they have closed ranks. In the center of this case is Nobel Prize winner, David Baltimore, who, when brought news of fraud committed by a researcher under his supervision, responded by shooting the messenger (O'Toole) instead of responding to the message. You are holding hearings into O'Toole's accusations. You are determined to use the power of Congress to stand up to the cronyism rampant within the scientific community.

Rashamon-Type Cases

- **Rashamon** is a Japanese movie about a killing and a sexual encounter. These events are inserted into three different narratives by the three different participants. The killing may be a murder or a suicide, depending on the story-teller. The sexual encounter may be a tryst or a rape, depending, again, on the narrative point of view.
- In this assignment, the class will recreate the Baltimore case from the standpoint of the different perspectives of the case's participants. Margaret O'Toole is the heroine-whistle-blower, false accuser, incompetent researcher, or trouble maker depending on who is telling the story. David Baltimore is a Nobel Prize winning biologist who is either exemplary of scientific virtue or an arrogant insider. John Dingell is a Congressional representative holding hearings into scientific integrity; he is either a McCarthy-type figure engaged in a witch hunt or a genuine crusader placing the public spotlight on an

internally corrupt scientific community. Theresa Imanishi-Kari is either a ruthless investigator playing the publish or perish game or the innocent victim of the accusations of a disgruntled former subordinate.
- Your job is to argue sympathetically from within each of these participant perspective. Then as a class, we will see if we can construct an overarching narrative or story that reconciles these conflicting perspectives.

Kelves provides the most comprehensive reporting on this case. Sismondo and Whitbeck provide shorter sketches. These exercises are built out of materials from each and where there are conflicts the author has given priority to Kelves's comprehensive study. Readers should consult all three to get an idea of the range of different views.

The notion of a Rashamon case comes from looking at the Swift case delivered by the research ethics team from Oklahoma State University and from the reflections on this issue by Patricia Werhane in her book, **Moral Imagination and Management Decision-Making** (1999), Oxford University Press.

The Belmont Report

- The **Belmont Report** was written, in part, in response to the abuse of those involved in the Tuskegee study. It identifies three fundamental ethical principles, respect for persons, beneficence, and justice.
- The report then uses these principles as a framework for making sense of concerns that arise in experiments involving human experiments: the informed consent of those participating in the experiment, assessing the risks and benefits associated with a given experiment, and outlining the ethical issues involved in selecting subjects to participate in experiments.
- The Belmont Report was also influence in setting up and structuring what have come to be known as Institutional Review Boards or IRBs. More information on IRBs can be found by reading Van Kloempken's short piece (accessed through the Open Seminar link above) and the

Office of Research Integrity's "Introduction to the Responsible Conduct of Research" especially pages 35-47.
- In this section, you will view a quick summary of the report's principles and research ethics concerns. Then you will apply these concepts by role-playing as a member of an IRB hearing a research proposal.

Principles

- **Respect for Persons**: "Individuals should be treated as autonomous agents." "Persons with diminished autonomy are entitled to protection." the Intro to RCR characterizes respect for persons as "their right to make decisions for and about themselves without undue influence or coercion from someone else (the researcher in most cases).
- **Beneficence**: "[D]o not harm" and "maximize possible benefits and minimize possible harms."
- **Justice**: "Who ought to receive the benefits of reseach and bear its burdens?" The introduction to RCR characterizes it as "the obligation to distribute benefits and risks equally without prejudice to particular individuals or groups, such as the mentally disadvantaged or members of a particular race or gender." This concentrates primarily on distributive justice and what Nozick calls the patterns of distribution include equal shares, need, effort, societal controls, and merit.

Applications in Research

- **Informed Consent**: **"Respect for persons requires that subjects, to the degree that they are capable, be given the opportunity to choose what shall or shall not happen to them. This opportunity is provided when adequate standards for informed consent are satisfied."** This is unpacked in terms of information (receiving information pertinent to consenting to participate), comprehension (understanding and appreciating the information communicated), and voluntariness (which excludes participation obrained through coercion or compulsion.)
- **Assessment of the risks and benefits**: "The assessment of risks and benefits requires a careful arrayal of relevant data, including, in some

cases, alternative ways of obtaining the benefits sought in the research. Thus, the assessment presents both an opportunity and a responsibility to gather systematic and comprehensive information about proposed research. For the investigator, it is a means to examine whether the proposed research is properly designed. For a review committee, it is a method for determining whether the risks that will be presented to subjects are justified. For prospective subjects, the assessment will assist the determination whether or not to participate." Sub-issues concern the nature and scope of consequences considered and what the report terms "systematic assessment." Other issues included under assessment of risks and benefits: brutal and inhumane consequences, necessary risk, serious impairment, vulnerable populations and documentation of informed consent procedures.

- **Selection of Subjects**: This touches most on the principle of justice. **"Just as the principle of respect for persons finds expression in the requirements for consent, and the principle of beneficence in risk/benefit assessment, the principle of justice gives rise to moral requirements that there be fair procedures and outcomes in the selection of research subjects."**

What you are going to do

Exercise 1: Take Research Ethics Pre-Test

1. Click on the Media File above to take the Research Ethics Pre-Test
2. This exercise is not a formal test. Instead, it is designed to help you begin to recognize how ethical issues permeate research. Of special importance are the cases in this exercise that look at research as it is constrained by the business environment. Ask yourself two questions. First, does competition distort or deflect research? How? Second, does money (and operating under market-driven conditions) distort or deflect research? How?
3. There are three ethics tests that are frequently taught in corporate ethics training programs: reversibility, harm, and publicity. Check out m13757 (Three Frameworks for Ethical Decision-Making and Good

Computing Reports) for more information on the tests. Or look up the description given of these tests at Computingcases.org. Does the use of these tests limit the range of disagreement you have with your classmates on these issues? Why or why not?

Exercise 2: Enron--A Puzzle or Mystery?

- Reread the summary of Malcolm Gladwell's distinction between a mystery and a puzzle.
- Was Enron a puzzle? Explain your answer. Was Enron a mystery? Explain why or why not.
- If Enron is a puzzle, then who do we blame? What do we blame them for? (How does moral responsibility function under a puzzle versus a mystery?)
- Pretend you are Jeffry Skilling, and you are testifying before the U.S. Congress on your role in the Enron disaster. How would you try to present Enron? As a puzzle or mystery? In other words, which framing of the case does the most to mitigate your blame?
- Now, think about this further question. Enron financial tools such as energy futures, mark-to-market accounting, and Special Purpose Entities function differently in the context of a puzzle than in the context of a mystery. Were these tools (say mark-to-market accounting) used to cover up crucial information and prevent experts and the public from solving the Enron puzzle?
- Or were these tools elements in a mystery where, properly interpreted by financial experts, could lead to the telling of the story of Enron's collapse.
- To re-frame the question slightly, are financial tools like mark-to-market accounting, energy futures, and SPEs value-neutral in that they become good or bad only the context of the use to which we put them? Or are these tools, themselves, value-laden so that they channel us in certain directions to realize some values and not realize others?
- Try thinking of financial tools as technologies. (John Dewey starts this process by thinking of operations of logic as tools for conducting inquiry. See Hickman's book cited below.)

Exercise 3: Baltimore Case Role-Play

- **Rashamon** is a Japanese movie about a killing and a sexual encounter. These events are inserted into three different narratives by the three different participants. The killing may be a murder or a suicide, depending on the story-teller. The sexual encounter may be a tryst or a rape, depending, again, on the narrative point of view.
- In this assignment, the class will recreate the Baltimore case from the standpoint of the different perspectives of the case's participants. Margaret O'Toole is the heroine-whistle-blower, false accuser, incompetent researcher, or trouble maker depending on who is telling the story. David Baltimore is a Nobel Prize winning biologist who is either exemplary of scientific virtue or an arrogant insider. John Dingell is a Congressional representative holding hearings into scientific integrity; he is either a McCarthy-type figure engaged in a witch hunt or a genuine crusader placing the public spotlight on an internally corrupt scientific community. Theresa Imanishi-Kari is either a ruthless investigator playing the publish or perish game or the innocent victim of the accusations of a disgruntled former subordinate.
- Your job is to argue sympathetically from within each of these participant perspective. Then as a class, we will see if we can construct an overarching narrative or story that reconciles these conflicting perspectives.

Exercise 4: Milgram Role-Play

- You are different members of the Institutional Review Board of a prominent east-coast U.S. university. Your job is to evaluate the research proposal presented by your instructor who is role-playing as famous social psychologist, Stanley Milgram.
- Read Kloempkin's short article on IRBs. You can access it by the URL provided in the second reference section. Study, also, the principles and applications set forth in the Belmont Report as summarized above. (You can also access the report which is fairly short through the URL provided below.)

- Then read Milgram's research proposal (actually a pretend proposal since the original experiment did not go through an IRB.) Evaluate this proposal using the Belmont criteria as well as the IRB criteria outlined by Kloempkin.
- You will look at videos made of some of the actual subjects of the Milgram experiments. View these and assess the actual impacts of the experience for them.
- Milgram (your teacher role-playing) will make a new proposal before you as an IRB member for a second phase of his experiment. Given what you have learned about the actual results of the experiment and what you have seen from the videos made of the experiments and using the Belmont principles and IRB criteria, should you allow Milgram to continue with his experiments.

What did you learn?

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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
https://cnx.org/content/m31972/

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
https://cnx.org/content/m31972/

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

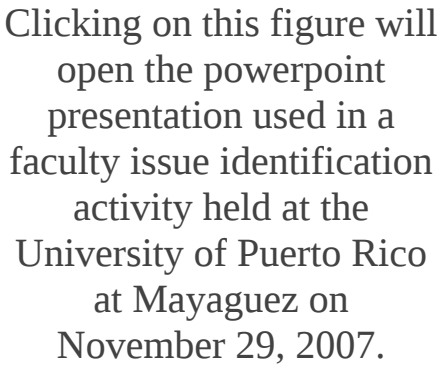
September 29 2007 Presentation
https://cnx.org/content/m31972/

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
https://cnx.org/content/m31972/

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
https://cnx.org/content/m31972/



Writing and Analyzing Ethics Cases in Business and Research Ethics Caution: this module is still under development. This student module is designed to help students write and analyze ethics cases in business and research ethics. It provides a short taxonomy of ethics cases, tips on identifying and writing cases, and a four-step framework for analyzing them. Converging, interdisciplinary research shows that identifying, developing, and studying ethics cases strengthens decision making and enables a concrete, "thick" understanding of basic and intermediate moral concepts. This module is being developed as a part of a project funded by the National Science Foundation, "Collaborative Development of Ethics Across the Curriculum Resources and Sharing of Best Practices," NSF-SES-0551779. It makes full use of the student module template developed in conjunction with this project.

Outline of contents of featured links in Online Ethics, UPRM-Ce-PRO, Computing Cases, and Connexions

- Computing Cases has experimented with a method for displaying a case that takes advantage of online features such as hyperlinking. The three cases featured (Therac-25, Hughes Aircraft, and Machado) provide excellent templates for developing your own case. They, typically, provide an abstract, case narrative, socio-technical system analysis, supporting document, perspective pieces, and short ethical discussions. The focus is on computer ethics.
- Online Ethics provides a wide variety of cases. Of special interest are the cases developed by graduate students that reflect their experiences in research ethics. These cases normally provide the case narrative, a commentary written by the graduate student who is the author of the case, and a commentary by one or more of the ethicists participating in the graduate research ethics workshop held through the auspices of the Association for Practical and Professional Ethics.
- Adopt an orphan. The University of Puerto Rico - Mayaguez Center for Ethics in the Professions has a number of case drafts displayed at its website. These come from faculty development workshops or from students who have developed cases in ethics workshops and classes. These provide only the bare narrative. Your group may choose to adopt an orphan by taking one of these narrratives and building upon it

through a socio-technical analysis or through links to supporting information online. These cases represent issues vital to students and instructors in business, science, and engineering. Developing one into a full blown case study would represent an excellent investment of your time.

- The National Society of Professional Engineers publishes cases that have been brought to and discussed by its Board of Ethical Review. The NSPE BER cases go all the way back to the 1960's and provide invaluable insights into how engineers interpret and use their codes of ethics. Each case has a summary, a question to be answered by the BER's deliberations, a list of relevant code provisions, a discussion of the case in terms of these provisions and a concluding decision. Occasionally, the BER does not reach complete agreement on cases and publishes a minority decision. Your group could adopt a BER case to this assignment by completing its research, identifying key decision points, and providing an analysis of the case's underlying socio-technical system.
- Finally, two Connexions modules devoted to the Biomatrix and Toysmart cases provides tables and templates to help you along on the process of analyzing your case. They set forth exercises and tables designed to help you work through the four stages of problem-solving based on an analogy between ethics and design problems. These are (1) problem specification, (2) solution generation, (3) solution testing, and (4) solution implementation.

Introduction

Learning Basic and Intermediate Moral Concepts

- Below is a media file that provides a summary of the basic and intermediate moral concepts that play a key role in business and engineering ethics. (Many of them also apply to research ethics.) This summary, in table form, will help you in forming your case. Which concepts arise in the case you are considering? Can you reform or rewrite the case to bring out other concepts?
- Examples of **Basic Moral Concepts**: Rights, Duties, Goods, and Virtues.

- Examples of **Intermediate Moral Concepts**: Conflict of Interest, Confidentiality, Free Speech, Informed Consent, Privacy, Intellectual Property, etc.
- Cases provide an excellent way of learning how these basic and intermediate moral concepts fit into the real world.

This module is designed to help you learn ethics by preparing and analyzing ethics cases.

- Discussing cases will help you learn about basic and intermediate moral concepts. Studying several cases helps you develop a repertoire of examples of different degrees and kinds of instantiations of these concepts in real situations. Discussing these cases and comparing them to one another helps you to develop paradigmatic examples of the concepts and then understand more problematic instances by establishing their relations to the paradigms through analogical reasoning. This process, called by some "prototyping" more accurately reflects the way we understand and use these thick concepts than does the process of formally defining them in terms of necessary and sufficient conditions. (See Michael Pritchard, **Reasonable Children**, and Mark Johnson, **Moral Imagination**. For a clear and useful explanation of relating problematic cases to paradigms (what they call "line drawing problems"), see Harris, Pritchard, and Rabins, **Engineering Ethics: Concepts and Cases** (2000) Wadsworth: 45-52.
- Cases provide the means of converting the freestanding ethics course into an ethics laboratory where you practice decision-making under conditions that mirror real world situations to the greatest degree possible.
- By helping us to develop cases, you keep our ethics program, in all its aspects, as up to date and relevant as possible. Many of these cases will be integrated into the College of Business Administration Ethics Bowl competition.

In this module you will carry out the following activities:

- Study and respond to a taxonomy that spells out different types of ethics cases.

- Receive advice on how to choose, prepare, write, and analyze your case.
- Study different templates for writing and analyzing your case. For example, the template (=procedures) for developing cases used by Dr. Huff at the Computing Cases website provides an excellent model for developing historical, thick cases. Dr. Huff places the development of a socio-technical system analysis at the center of his case writing and analyzing method.
- You will receive advice on how to develop a poster presentation on your case study and your analysis.

What you need to know …

Michael Davis in Ethics and the University (1999) Routledge: 143-174 provides a comprehensive discussion of how the field of practical and professional ethics employs the case study method of teaching.

- He discusses how law schools began to use discussion of legal decisions (law cases) to teach the law.
- Professors presented these cases using the "Socratic Method" or what has also been termed as "testing to destruction." Aggressive questioning is used to get students accustomed to the pressures of making a legal argument in an adversarial context in court. The Socratic Method has never been successfully used in teaching business because questions are not used by managers as weapons in a legal context but as means for gathering the information necessary for making informed decisions.
- Davis also discusses how the Harvard Business School adopted the legal model of teaching by case discussion but quickly changed this methodology to reflect better the underlying dynamics of the business situation.
- Philosophers have also used cases to clarify, rhetorically support, or advance a position in a philosophical controversy. Deciding whether to keep the promise you made to the village chief (on his deathbed) to use his inheritance to build a statute of him or to buy the village children much needed shoes helps to point out ethical conflicts and to advance a theory as a more effective way of addressing these conflicts. The

dilemma that Jim in the Jungle faces (made famous by Bernard Williams) that is portrayed in the Mountain Terrorist module also provides an example of this kind of puzzle case.
- Ethics cases began to emerge when physicians brought practical and difficult decisions raising ethical issues to philosophical ethicists for discussion and counsel. These case have also undergone different transformations as they have been used to promote learning and discussion in the different areas of practical and professional ethics.

This quote from Donaldson and Gini also provides insight into how the case study method was first imported into business teaching.
"What is known today as the case study method began at Harvard University in 1908 with the opening of the new business school. The business school's first catalog stated that the "problem method" would be utilized "as far as practicable." After years of struggle and experimentation, the case method reached maturity at Harvard from 1919 to 1942 under the encouragement of the deal of the business school, Wallace Donham. It was during these years that the method became the trademark of the Harvard Business School, a position it retains to this day." Thomas Donaldson and Al Gini, Case Studies in Business, 4th Ed. New Jersey: Prentice Hall, 1996: 12.

Michael Davis in **Ethics and the University** also provides an excellent case taxonomy. Below are the sixteen distinctions he uses to classify cases. It is best to think of this taxonomy, not as a static matrix within which we slot a case, but as a set of specifications and constraints we can use to design or modify cases to fit our needs and purposes.

1. **Long (and very long) v. short (and very short)**
2. **Documents (or pseudo-documents) v. summary**
3. **Single perspective v. several perspectives**
4. **Narrative v. dialogue**
5. **Pure fact v. descriptive commentary**
6. **Realistic (hypothetical) v. real (actual)**
7. **Stories v. problems**
8. **You (agent) v. they (judge)**
9. **Would v. should**

10. **Top v. bottom**
11. **Success (the positive) v. failure (the negative)**
12. **Single issue (poor) v. multi-issue (rich)**
13. **Single stage v. multi-stage**
14. **Ordinary v. technical language**
15. **Personal v. policy**
16. **Living v. frozen**

Case Taxonomy (Taken from Huff and Frey)

- **Thick vs. Thin Cases**: Thin cases are useful for abstracting a single point and focusing work on that point. Thick cases can give the student practice in making ethical decisions in the full context of the messy real world.
- **Historical vs. Hypothetical**: Historical cases are based on actual experience in the field. The Therac-25, Ford Pinto, Hughes Aircraft, and Machado cases are all historical. these provide the sort of excitement and immediate relevance that help students to recognize the importance of ethical enquiry. On the other hand, cases that are hypothetical, fictional, or abstract remove much of the impact of the historical case, though they allow the case writer the freedom to structure, abstract and focus the discussion on precisely the issues of concern. Harvard Business cases are generally thick and historical. Useful--in fact excellent--for in-depth study, they present difficulties for those interested in directing shorter activities.
- **Good vs. Bad News cases**: The tendency in ethics cases is to have only bad news cases in which some bad outcome occurs because of poor choices. These cautionary tales do grab students' imaginations but the asymmetrical emphasis on bad news gives the impression that good--or even decent--action is impossible, rare, and heroic. Bad news cases should be balanced with cases of morally exemplary scientists and engineers as well as with good choices toward good outcomes made by ordinary scientists and engineers.
- **Big vs. Small News Cases**: Bad news cases are frequently big news cases; bad news is more sensational and often more newsworthy. Bad news cases are also rare events which make them big news. But these cases frequently present students with a spectacle which, while

interesting, precludes involvement. On the other hand, small news cases are about the everyday decisions that scientists and engineers make in the way they handle reporting, data collection , process management, personnel and other day-to-day issues. So big news cases are more sensational and exciting; little news cases are more appropriate to the day-to-day ethical situations that students are likely to face.

- From Huff, C. W. and Frey, W. (2005) "Moral pedagogy and practical ethics" **Science and Engineering Ethics** Vol. 11, 1-20.)

The following table compares and contrasts participant vs. evaluator cases. In general, the difference comes down to this: participant cases are excellent for practicing decision-making while evaluator cases do an excellent job of teaching students how to apply ethical theory.

Participant	**Evaluator**
Student takes on the role of one of the participants and makes a decision from that perspective	Student takes up a standpoint from outside the case and evaluates the participants and their deeds.
Helps students to practice integrating ethical considerations into designing and implementing solutions to real world problems.	Useful for introducing and practicing different ethical principles and concepts
Allows students to practice making decision under real world constraints such as lack of knowledge and lack of time.	Useful for introducing and practicing different ethical principles and concepts.

Participant vs. Evaluator Cases

What you will do...

Choosing Your Case

- Tie your case to areas that interest you and tie directly to your research.
- Chose narratives that raise an ethical issue such as how to mitigate or prevent harm, how to resolve value conflicts, how to balance and respect different stakeholder rights, how to balance out conflicting elements of a socio-technical system, and how to transform a dysfunctional organization into an ethical organization.
- Choose a case that can be built out of readily accessible information. Looking carefully at the case's socio-technical system can help you identify and assess information needs.
- Your case should interest and engage you. You and your group should find preparing it a good investment of your time, energy, and expertise.

Structuring Your Case

- **Abstract**: Begin your case with a short paragraph that summarizes or outlines the narrative events. It should draw the reader in.
- **Historical Narrative**: Here, in about 5 to 10 pages, you should detail the "story" of your case. Elements in a narrative or story include a beginning, middle, and end. Protagonists or main characters confront difficulties or obstacles. (This is called the agon in Greek.) At the end of your case, the reader should be clear about how successful the protagonist dealt with the agon and the antagonists.
- **Socio-Technical Analysis** The case narrative unfolds in a particular context called a socio-technical system. Identify the components of your case's STS. Generally these include hardware, software, physical surroundings, stakeholders, procedures, laws, and information systems. Summarize your STS in a table. Then unpack it in a detailed analysis. Frequently, you will find the conflict in your case's narrative in the form of conflicts between values embedded in the STS.

- **Participant Perspectives**: If you were detailing the Enron case, you would identify a key decision point and then weave a mini-narrative around it. For example, an important moment occurred when Enron decided to implement mark-to-market accounting. Invent a dialogue where this was discussed and reenact the reasons the eventually led to the decision.
- **Ethical Perspective Pieces**: The cases prepared by graduate students in APPE's seminar in research ethics were followed by commentaries by the authors and the ethicists who directed the seminar. They explore ethical issues in the context of the case's narrative in issues such as privacy, confidentiality, and informed consent. These ethical perspective pieces can be drawn out into a full blow analysis that follows a framework such as (1) problem specification, (2) solution generation, (3) solution testing, and (4) solution implementation.
- **Chronology**: A table outline in chronological order the key events of the case helps you and your reader stay on track.

Analyzing Your Case

1. **Do a Socio-Technical Analysis**: Use the examples found at m14025 to get you started. The STS will help you identify key problems.
2. **Specify Your Problem**: Look for conflicts between the values embedded in the STS. Look also for harmful consequences in the present, the short term future, and the long term future.
3. **Generate a Solution List. Refine that Solution List**: Work on changing and rebalancing elements in the STS to resolve the conflict or harmful consequences you scoped when specifying the problem.
4. **Test Your Solutions**: Use the Ethics Tests (reversibility, harms/benefits, and publicity) plus code and values tests to test your solution. Rank them.
5. **Implement Your Solution**: Using the feasibility test as a check list, identify possible resource, interest, and technical constraints that could impede the implementation of your solution.

Presentation on Problem Solving
https://cnx.org/content/m15991/

Clicking on this media file

will open a powerpoint presentation on problem solving in ethics. It outlines specifying the problem, generation solutions, testing solutions, and implementing solutions. This problem solving method is based on an analogy between ethics and design.

Advice for Preparing a Poster on Your Case

- **Your Objective**: Develop a Poster that captures the case's narratives and summarizes the different stages of a case analysis framework. In the figure below, we have appended an excellent poster presentation developed by Dr. Carlos Rios.
- **Dimensions**: Your poster should print out onto a piece of paper two feet by three feet. It should be available digitally in ppt format (either version 2003 or 2007).
- **Due Date: May 1 for presentation in class either May 1 or May 8.**
- **Content**: (1) summary of key ethically relevant facts; (2) highlight of the dominant elements of the case's socio-technical system; (3) an analysis of the case that includes problem definition, solutions generated, solution testing (in the form of a solution evaluation matrix), and a plan for implementing the solution over situational constraints; (4) Your names; (5) items that will help visually portray case elements such as flow charts and pictures.
- Make your case visually interesting and choose images that capture the essence of the concepts you are portraying. Be daring and exciting here.
- Practice presenting from your poster. And have fun!

Poster Presentation for GERESE NSF Project

https://cnx.org/content/m15991/

Clicking on this figure will give you the poster presentation prepared by Dr. Carlos Rios for GERESE, an NSF project in research ethics for graduate students.

Poster Presentation: Poehlman Case
https://cnx.org/content/m15991/

Clicking on this figure will open a poster presentation reporting on a case of scientific misconduct.

The Poehlman Case analysis/poster is about half way completed. It has been included to give you an idea of how the case development process looks (and feels) at its mid point. The STS table included provides a sense of the gaps that need to be filled with further investigation and analysis. For example, more information could be collected on hormonal treatment therapy. The dialogue box quoting from one of the witnesses could be expanded into conversations between Poelman and the witness or between the witness and officials at the University of Vermont. The point is to identify gaps in the case development that can be filled with moral imagination and further research.

Content	Style
Information gaps such as details on hormone replacement therapy	Change "background" of poster; interferes with the title
Provide more depth such as personalities of participants	Do not use the same "background" for the Ethical Problem section or eliminate this part to create more space for other parts
Case needs "thickness" or more concrete detail	Difficult to read different sections (Too crowded)
Describe motivations of main participants, especially Poehlman	Better arrangement of pictures on poster space needed
More information such as the amount of money awarded to Poehlman in his grants	Eliminate shadows throughout poster
More information needed on ORI investigative procedures	Poster should have "depth" in the form of embedded links that open up background information
References to Wikipedia, the ORI publicity release, and Pascal presentation need to be in larger font	Empty space in Poster could be better utilized

Style- and Content-Based Criticisms of Poehlman Poster

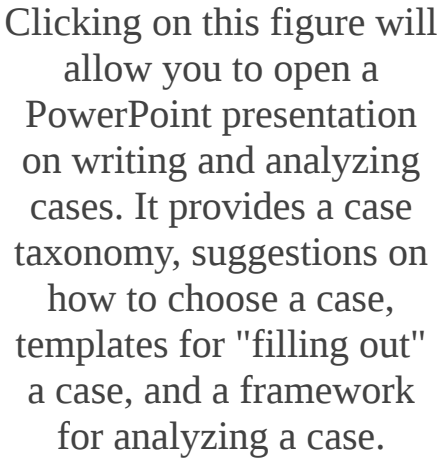
What did you learn?

After you finish your poster presentation, take some time to reflect on the reaction of your teacher and classmates. Was it what you expected? How could you change things to align better your expectations and goals with results? What did you learn from developing this case? What were the obstacles, frustrations, or negative experience you faced in this exercise? Assess this exercise, your case, the reaction, and your experience in general.

Appendix

Below are supporting materials to help with you as you work through this module. They include a presentation on writing and analyzing cases, a table of basic moral concepts, and a table of intermediate moral concepts.

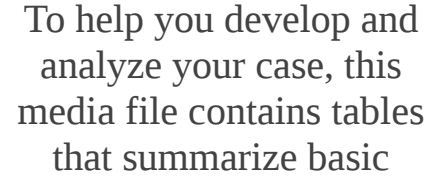
Presentation on Writing Cases
https://cnx.org/content/m15991/



Clicking on this figure will allow you to open a PowerPoint presentation on writing and analyzing cases. It provides a case taxonomy, suggestions on how to choose a case, templates for "filling out" a case, and a framework for analyzing a case.

Presentation onCase Writing
https://cnx.org/content/m15991/ https://cnx.org/content/m15991/

Basic Moral Concepts
https://cnx.org/content/m15991/



To help you develop and analyze your case, this media file contains tables that summarize basic

moral concepts such as goods, rights, duties, and virtues.

Intermediate Moral Conceptse
https://cnx.org/content/m15991/

Clicking on this figure will open a table that summarizes intermediate moral concepts such as privacy, informed consent, and safety. These concepts will help you to choose, develop and analyze your case.

EAC ToolKit Project

This module is a WORK-IN-PROGRESS; the author(s) may update the content as needed. Others are welcome to use this module or create a new derived module. You can COLLABORATE to improve this module by providing suggestions and/or feedback on your experiences with this module.

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