

University of Puerto Rico
Mayagüez Campus

Course Syllabus

1. General Information:
Alpha-numeric codification: INTD 6095 Course Title: Responsible Research in Appropriate Technology Number of credits: 3 Contact Period: 3 contact hours of Conference a week
2. Course Description:
<i>English:</i> Responsible research in community development and appropriate technology including themes such as Introduction to RCR (Responsible Conduct of Research), Capabilities Approach, Responsible Choice in Appropriate Technology, Socio-Technical System Analysis, and Collective Informed Consent in Developing Communities. Students will design case studies that explore research in community development projects and appropriate technology.
<i>Spanish:</i> Investigación responsable en el desarrollo de la comunidad y de la tecnología apropiada, incluyendo temas tales como Introducción a RCR (Conducta Responsable en la Investigación), Enfoque de las Capacidades, Selección Responsable de Tecnología Apropiada, Análisis de Sistemas Socio-técnicos, y el Consentimiento Informado Colectiva en Comunidades en Desarrollo. Los estudiantes designarán estudios de casos que exploran las investigaciones en proyectos de desarrollo comunitario y la tecnología apropiada.
3. Pre/Co-requisites and other requirements:
graduate student standing.
4. Course Objectives:
Upon successful completion of this course the student shall be able to: <ul style="list-style-type: none">• Develop a broad awareness of Responsible Conduct of Research in technology and its relationship to human progress and community development.• Understand and apply socio-technical system analysis to real world cases• Learn the process of choice that is inherent to technological design, especially in the context of developing communities• Develop an understanding of the Human Capability Approach by applying and discussing it in case studies of human development and appropriate technology• Exploring partnerships between governments, NGOs, for-profit, and non-profit organizations for attacking problems in developing communities The objectives of the course will be assessed using essay exams, portfolios, in-class poster presentation, and case study presentations. Other assessment tools such as quizzes and short assignments may be used at the professor's discretion.
5. Instructional Strategies:
<input checked="" type="checkbox"/> conference <input checked="" type="checkbox"/> discussion <input checked="" type="checkbox"/> computation <input type="checkbox"/> laboratory
<input checked="" type="checkbox"/> seminar with formal presentation <input checked="" type="checkbox"/> seminar without formal presentation <input type="checkbox"/> workshop
<input type="checkbox"/> art workshop <input type="checkbox"/> practice <input checked="" type="checkbox"/> trip <input type="checkbox"/> thesis <input checked="" type="checkbox"/> special problems <input type="checkbox"/> tutoring
<input checked="" type="checkbox"/> research <input type="checkbox"/> other, please specify:

6. Minimum or Required Resources Available:

Reading list of articles and book chapters.

7. Course time frame and thematic outline

Outline of Topics	Contact Hours
<p>Introduction to Responsible Conduct of Research - Presentation “The Gray World: Introducing Ethics to Future Professionals in Science and Engineering” http://cnx.org/content/m37142/1.7/ - Fabrication, Falsification, and Plagiarism -Informed Consent, Risk, and Justice in Scientific Research -Other RCR issues such as conflict of interest, authorship, and mentorship ORI Manual: Introduction to Responsible Conduct of Research, Nicolas Steneck, http://ori.hhs.gov/documents/rcrintro.pdf.</p>	4
<p>Exploration of Responsible Conduct of Research: The Institutional Review Board or IRB -Introduction to the Belmont Report (Connexions Module: “Ethical Issues in Graduate Research” http://cnx.org/content/m31972/1.3/) -IRB Role Play (Found at Open Seminar http://openseminar.org/ethics/)</p>	2
<p>Profitable Partnerships between for-profit, not-for-profit, NGOs, and governments geared toward eliminating poverty and hunger -Examination of successful cases presented by Werhane et al -Skill Development Activities: Moral Imagination, Systems Thinking, Deep Dialogue -Resource: Werhane, P., S.P. Kelley, L.P. Hartmen, D.J. Moberg. <i>Allieving Poverty through Profitable Partnerships: Globalization, Markets and Economic Well-Being</i>, Routledge, 2010</p>	6
<p>The Capabilities or Human Development Approach -Presentation of Rights Approach -A Presentation of Capabilities Approach as alternative to rights approach - Resource: Nussbaum, Martha C. <i>Creating Capabilities: The Human Development Approach</i>, Belknap Press of Harvard University Press, 2011.</p>	6
<p>Responsible Choice in Appropriate Technology -Technology Choice Cases -Poster Activity - Resource: “Appropriate Choice in Appropriate Technology.” http://cnx.org/content/m43922/1.17/</p>	9
<p>Collective Informed Consent in Developing Communities -<i>Resource</i>: Brian Schrag (2006) “Research with Groups: Group Rights, Group Consent, and Collaborative Research.” <i>Science And Engineering Ethics</i>, Vol 12, 511-521. - <i>Resource</i>: Brian Schrag (2009) “Piercing the Veil: Ethical Issues in Ethnographic Research.” <i>Science and Engineering Ethics</i>, Vol 15: 135-160. - <i>Activity</i>: Ethics Bowl Debate on case, “Informed Consent and the Collection of Biological Samples from Indigenous Populations.” Graduate Research Ethics: Cases and Commentaries - Volume 2, 1998 edited by Brian Schrag</p>	9
<p>Designing New Case Studies in Community Development and Appropriate Technology - <i>Resource</i>: “Writing and Analyzing Cases in Business and Research Ethics”</p>	9

http://cnx.org/content/m15991/1.8/ - Activity: Students will identify ongoing case in community development/appropriate technology, build a case study, and present it before the class for discussion	
Total hours: (equivalent to contact period)	45

8. Grading System

Quantifiable (letters) Not Quantifiable

9. Evaluation Strategies (suggested; may be modified at discretion of instructor)

THEORY	Quantity	Percent
<input checked="" type="checkbox"/> Exams (Midterm)	1	30
<input checked="" type="checkbox"/> Quizzes	Variable	0 to 10
<input checked="" type="checkbox"/> Portfolio	1	30
<input checked="" type="checkbox"/> Final Project: Case Analysis	1	30
<input checked="" type="checkbox"/> Other: Participation	Variable	0 to 10
TOTAL:		100%

10. Bibliography:

Required Readings –

1. Nussbaum, Martha C. *Creating Capabilities: The Human Development Approach*, Belknap Press of Harvard University Press, 2011.
2. Robeyns, Ingrid, "The Capability Approach", *The Stanford Encyclopedia of Philosophy* (Summer 2011 Edition), Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/sum2011/entries/capability-approach>. Accessed March 12, 2012.
3. Werhane, P., S.P. Kelley, L.P. Hartmen, D.J. Moberg. *Allieivating Poverty through Profitable Partnerships: Globalization, Markets and Economic Well-Being*, Routledge, 2010.
4. *Introduction to the Responsible Conduct of Research*, Nicholas H. Steneck (illustrations by David Zinn <http://ori.hhs.gov/documents/rcrintro.pdf>)
5. Belmont Report <http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.html>.
6. Connexions Modules
7. Ilse Oosterlaken and Jeroen van den Hoven, eds. (2012) *The Capability approach, Technology and Design*. London: Springer.

References:

1. Feenberg, Andrew. (1999). *Questioning Technology*. London: Routledge.
2. M. Flanagan, D. Howe, and H. Nissenbaum, "Embodying Values in Technology: Theory and Practice," in *Information Technology and Moral Philosophy*, Jeroen van den Hoven and John Weckert, Eds. Cambridge, UK: Cambridge University Press, 2008, pp. 322-353.
3. Franssen, Maarten, Lokhorst, Gert-Jan and van de Poel, Ibo, "Philosophy of Technology", *The Stanford Encyclopedia of Philosophy (Spring 2010 Edition)*, Edward N. Zalta (ed.), URL = <http://plato.stanford.edu/archives/spr2010/entries/technology/>.
4. Harris, Charles. (2008). "The Good Engineer: Giving Virtue its Due in Engineering Ethics". *Science and Engineering Ethics*, 14: 153-164.
5. Huff, C. "What is a Socio-Technical System?" From Computing Cases website. http://computingcases.org/general_tools/sia/socio_tech_system.html. Accessed January 10, 2012.
6. Huff, C. and Finholt, T. (1994). *Social Issues In Computing: Putting Computing in its Place*. New York: McGraw-Hill.

7. Kenneth L. Kraemer, Jason Dedrick, AND Prakul Sharma. "One Laptop Per Child: Vision versus Reality." *Communications of the ACM*. June 2009, Vol. 52, No. 6: 66-73
8. Lucena, J., J. Schneider, and J.A. Leydens. *Engineering and Sustainable Community Development*, Morgan and Claypool, 2010.
9. Martha Nussbaum. *Frontiers in Justice: Disabilities, Nationalities, Species Membership*. Cambridge, Mass: Harvard University Press, 2006.
10. Nussbaum, Martha C. *Creating Capabilities: The Human Development Approach*, Belknap Press of Harvard University Press, 2011: 20, 33-34.
11. Wanda J. Orlikowski. *Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations*. *ORGANIZATION SCIENCE*, 2000 INFORMS. Vol. 11, No. 4, July–August 2000, pp. 404–428
12. Perrow, C. (1984). *Normal Accidents: Living With High-Risk Technologies*. Basic Books.
13. Roopali Phadke. "People's Science in Action: The Politics of Protest and Knowledge Brokering in India." In *Technology and Society*, Johnson and Wetmore eds. MIT Press, 2009, 499-513.
14. Pinch, T.J. and Bijker, W. (2009). *The Social Construction of Facts and Artifacts*. In *Technology and Society: Building Our Sociotechnical Future*, Johnson, D.G. and Wetmore, J.M., (Eds.). Cambridge, Mass: MIT Press: 107-139.
15. Schumacher, E. F. *Small Is Beautiful: Economics as if People Mattered*, Harper Prenal, 1973/2010: 188-201.
16. Amartya Sen. *Development as Freedom*. Alfred D. Knopf, INC, 1999.
17. Sismondo, S. (2004). *An Introduction to Science and Technology Studies*. Oxford, UK: Blackwell Publishing: 51-52.
18. Stephen Smith. (2008). *Ending Global Poverty: A Guide to What Works*. Macmillan: p. 11 and following. Trent, March. (1992).
19. Weber, Rachel N. "Manufacturing Gender in Commercial and Military Cockpit Design." *Science, Technology, and Human Values*, Vol. 22, No. 2. (Spring, 1997), pp. 235-253. <http://www.jstor.org> Tue Jan 2 16:14:06 2007
20. Werhane, P., S.P. Kelley, L.P. Hartmen, D.J. Moberg. *Allievating Poverty through Profitable Partnerships: Globalization, Markets and Economic Well-Being*, Routledge, 2010: 21, 26-7, 75-85, 91.
21. Jamison Wetmore. "Amish Technology: Reinforcing Values and Building Community" in *Technology and Society*, eds. Johnson and Wetmore. 2009, MIT Press: 298-318
22. *Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought*. Cambridge, Mass: MIT Press paperback edition.
23. Brian Schrag (2006) "Research with Groups: Group Rights, Group Consent, and Collaborative Research." *Science And Engineering Ethics*, Vol 12, 511-521.
24. Brian Schrag (2009) "Piercing the Veil: Ethical Issues in Ethnographic Research." *Science and Engineering Ethics*, Vol 15: 135-160.
25. "Informed Consent and the Collection of Biological Samples from Indigenous Populations." *Graduate Research Ethics: Cases and Commentaries - Volume 2*, 1998.

Morgan & Claypool Series available through UPRM library

1. Caroline Baillie, Eric Feinblatt, Timothy Thamae, and Emily Berrington. (2010). *Needs and Feasibility: A Guide for Engineers in Community Projects --- The Case of Waste for Life*. London, Morgan & Claypool.
2. Carl Mitcham, David Munoz. (2010). *Humanitarian Engineering*. London: Morgan & Claypool.
3. Donna Riley. (2008). *Engineering and Social Justice*. London: Morgan & Claypool.
4. J. D. Humphrey and J.W. Holmes. (2009). *Style and Ethics of Communication in Science and Engineering*. London: Morgan & Claypool.

Students will identify themselves with the Institution and the instructor of the course for purposes of assessment (exams) accommodations. For more information please call the Student with Disabilities Office which is part of the Dean of Students office (Chemistry Building, room 019) at (787)265-3862 or (787)832-4040 extensions 3250 or 3258.

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