

University of Puerto Rico
Mayagüez Campus

Course Syllabus

1. General Information:
Alpha-numeric codification: INTD 5095 Course Title: Appropriate Technology Number of credits: 3 Contact Period: 3 contact hours of Conference a week
2. Course Description:
English: General overview of technology from historical and philosophical viewpoints. Critical examination of choices inherent in technology and alternative ways to define and measure progress. Traditional and new definitions of appropriate technology. Challenges and best practices to apply engineering and technology to underserved, under-funded, or wrong-developed communities. Spanish: Repaso general de la tecnología del punto de vista de histórico y filosófico. Análisis crítico del proceso de escoger tecnologías y modos alternos de definir y medir progreso. Definiciones tradicionales y emergentes de tecnología apropiada. Retos y mejores prácticas para aplicar la ingeniería y tecnología en comunidades que no han sido servidas apropiadamente, con pocos fondos asignados o desarrolladas erróneamente.
3. Pre/Co-requisites and other requirements:
3 rd year standing, or graduate student standing suggested but not required.
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 technology and its relationship to human progress.• Explain the process of choice that is inherent to technological development and progress• Develop an understanding of appropriate technology and its relation to ethics and sustainability• Cite and critique traditional and modern examples of appropriate technology• Listen to and cooperatively work with members of a community in which a technological solution is proposed• Competently undertake employment or research in appropriate technology
The objectives of the course will be assessed using exams, community projects and reports. Other assessment tools such as quizzes and short assignments could 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
Appropriate Technology and Engineering -Introduction, Technology Choice and Holistic Approach -Appropriate Technology and Philosophy -Appropriate Technology Examples and ICAT5	9
Society -Appropriate Technology and Social-Technical Systems -Appropriate Technology and Sustainable Well Being - Appropriate Technology and the Arts	9
Community Based Engineering and Technology -Appropriate Technology and Community Development -Appropriate Technology and Participative Action Research -Appropriate Technology, Cooperative Models, Co-Production, Social Entrepreneurship, Technology Transfer and Innovation	9
Economics, Sustainability and Policy -Appropriate Technology and Economic Growth -Appropriate Technology, Sustainability, and Industrial Ecology - Appropriate Technology, Global/Renewable Energy and Public Policy	9
Ethics -Appropriate Technology and Survival Ethics - Appropriate Technology and Birthing: Case Study of Pre-natal and Delivery Technology	6
Case Studies -Field Trip (Casa Pueblo, Punta Ventana, Community Water System) -Final Project (presentations)	3
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	Variable	0-15
<input checked="" type="checkbox"/> Final Exam	Variable	0-20
<input checked="" type="checkbox"/> Quizzes	Variable	0-50
<input checked="" type="checkbox"/> Homework	Variable	0-50
<input checked="" type="checkbox"/> Oral Reports	Variable	0-20
<input checked="" type="checkbox"/> Written Reports	Variable	0-20
<input checked="" type="checkbox"/> Portfolio	Variable	0-10
<input checked="" type="checkbox"/> Projects	Variable	0-30
<input type="checkbox"/> Journals		
<input checked="" type="checkbox"/> Other: Participation	Variable	0 to 10
TOTAL:		100%

10. Bibliography:

Textbook: Engineering and Sustainable Community Development, Lucena, J., J. Schneider, and J. Leydens, 2010.

References:

- [1] Paper Heroes: A Review of Appropriate Technology, Witold Rybczynski, 1980.
- [2] Technology choice: a critique of the appropriate technology movement, Kelvin W. Willoughby, 1990.
- [3] Controlling Technology, William B. Thompson, 2003.
- [4] Engineering in Context, S.H. Christensen, B. Delahousse, and M. Meganack (Eds.), Academica, Copenhagen, 2009.
- [5] Tras otro progreso: Filosofía de la tecnología como si las cercanías importaran, Héctor J. Huyke (manuscript), 2011.
- [6] Engineering and Social Justice, Riley, D., 2008.
- [7] Ethics in Engineering, Martin, M.W. and R. Schinzinger, 2005.
- [8] Engineering Ethics: Concepts, Viewpoints, Cases, and Codes, Smith, J., P. Harper, and R. Burgess, 2008.
- [9] "LCA and Green Design: A Context for Teaching Design, Environment and Ethics," I. Nair, Journal of Engineering Education, October 1998.
- [10] Natural Capitalism: Creating the Next Industrial Revolution, Hawken, P., A. Lovins, and L. Hunter Lovins, 2010.
- [11] Measuring our progress: the power of wellbeing, Saamah Abdallah, Sorcha Mahony, Nic Marks, Juliet Michaelson, Charles Seaford, Laura Stoll and Sam Thompson, February 2011.
- [12] Antología de Lecturas del Instituto de Tropical Energía, Ambiente y Sociedad, Efraín O'Neill-Carrillo (Ed.), 2009.
- [13] "Cradle-to-cradle design: creating healthy emissions – a strategy for eco-effective product and system design", Michael Braungart, William McDonough, and Andrew Bollinger, Journal of Cleaner Production, 15(13-14), September 2007.
- [14] Industrial Ecology, Thomas E. Graedel, and Braden R. Allenby, 2003.
- [15] Morgan & Claypool Series: Synthesis Lectures on Engineers Technology and Society - <http://www.morganclaypool.com/toc/ets/5/1>
- [16] Small Is Beautiful: Economics As If People Mattered, Schumacher, E. F., 1973.
- [17] Thinking Through Technology: The Path Between Engineering and Philosophy, Carl Mitcham, 1994.

11. According to Law 51

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 at (787)265-3862 or (787)832-4040 extensions 3250 or 3258.

Prepared by:

Approved by:

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Dr. Christopher Papadopoulos