
ESSO352 SUSTAINABILITY: CHALLENGES AND RESPONSES
IES Abroad Barcelona Syllabus – Last updated: Apr 7th, 2016

DESCRIPTION: Sustainability is widely regarded as one of the key challenges facing humanity in the new millennium. Having achieved great success in attaining prosperity for a large proportion of mankind through industrial development, the consequences of unfettered growth have begun to catch up with us. A diverse array of crises has begun to make itself felt, threatening many of the environmental and social support systems we take for granted.

The course comprises four sections. In the first section (Sessions 1 to 3), we introduce some key concepts that we will use along the whole course. In the second section (sessions 4 to 6), some methodologies are discussed after presenting some real experiences implemented elsewhere and the final project to be implemented by students in groups during this course. In the third section (Sessions 7 to 11) we will examine some of the tremendous challenges that we face, all around the globe: we will identify key problem areas, recognize their consequences, and attempt to understand the reasons for their persistence. In the last section (Sessions 13 to 24), we will discuss various responses born at different levels involving policies, technologies and social initiatives that may help us change course to a more promising and fulfilling future. (3 credits)

The course includes an extra full-day session of a course related excursion to be held on a FRIDAY with mandatory attendance.

"We cannot solve our problems with the same thinking we used when we created them" (Albert Einstein)

PREREQUISITE: One prior course in one or more of the following disciplines: Political Science, Social Science, History, Environmental Sciences.

INSTRUCTOR: Xavier de Pedro Puente, Ph.D.

METHOD OF PRESENTATION:

- **LECTURES:** Delivery of core course content.
- **Class discussion:** Sustainability spans scientific knowledge and personal belief systems. Class discussion enables us to probe the validity and strength of scientific knowledge and argumentation, as well as analyze how our thought processes and behavioral patterns are influenced by, and in turn influence, various sustainability practices
- **Reader:** Key texts designed to develop general understanding of the subject matter and foment discussion. The readings listed for a particular session must be completed BEFORE coming to class that day.
- **Videos:** Many sessions include viewing small excerpts from some documentaries or some short videos from key experts related to the readings of each session.
- **Analysis:** Rudimentary system diagrams and SWOT analysis are powerful tools for identifying mechanisms of cause and effect, interaction, feedback, and eventual areas of improvement for new actions and projects. By preparing them, students will be able to better understand key aspects of sustainable and unsustainable action.
- **On site classes:** On site classes enable experiential learning of innovative technologies and practices relating to sustainability, as manifested in the city of Barcelona
- **Course related excursions:** One course related excursion will complement the topics covered in class. See more information below.
- **Class Project:** Over the duration of the course, we will design and implement actions that will improve the sustainability of IES community.

LANGUAGE OF PRESENTATION: English

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REQUIRED WORK AND FORM OF ASSESSMENT: Class participation (20%); mid-term exam (20%); assignments and pop quizzes (20%); class project (20%); final exam (20%).

- Class participation: I will need your cooperation to make our time together interesting and beneficial for us all. This shouldn't be too hard, since sustainability is not a dogmatic topic, and it begs for discussion and analysis. I will challenge you to closely examine many assumptions, and to think critically about the concepts, tools and practices we will discuss in class.
- Assignments and pop quizzes: Homework (assigned only for certain sessions) provides an effective means for translating reading assignments into knowledge. They may be transforming text into graphical interpretations of processes called systems diagrams, which link various issues not always viewed as interrelated, and provide a fresh analytical perspective on the topics being studied. Other assignments might comprise class presentation on a current hot topics of your choice, or SWOT Analysis (Strengths, Weaknesses, Opportunities and Threats), as well as pop quizzes with questions of short answers related to the reading or videos seen in class which need to be answered at the beginning of the session and again at the end after the class discussion.
- Course related excursions: A course related excursion of mandatory attendance is organized on a Friday within the scope of this course, to extend the topics covered in the other course sessions. You will have the chance to visit and work in an Organic Farm within a Local Community Network, and get some product back from your work tutored by them. This trip is also open to a reduced number of IES Abroad Barcelona students from other courses (on a "first come – first serve" basis at the registration level for the trip for those other students).
- Mid-term exam: The exam will assess students' knowledge of the basic principles of sustainability covered in the first section of the course.
- Class project: An assessment of the efforts and outcomes of the IES sustainability project undertaken by the class. At the final document submitted to the instructor, students will write down their names next to the document sections where they contributed, as well as other ways to report the individual contribution of each student to the class project along the term (team organization, retrieval of information, document structure, etc.). A Wiki-based web site provided by the course may be used to facilitate this project (eventually held in small groups) while still allowing to work coordinated as a unique big group, allowing cooperation and avoiding overlapping from the work begin done by other class mates.
- Final exam: The exam will assess students' knowledge of the basic obstacles to sustainability, with special emphasis in the topics learned in the second section of the course.

IES ATTENDANCE POLICY: Attendance is mandatory for all IES Abroad classes, including course-related excursions. Any exams, tests, presentations, or other work missed due to student absences can only be rescheduled in cases of documented medical or family emergencies. If a student misses more than three classes in any course 3 percentage points will be deducted from the final grade for every additional absence. Seven absences in any course will result in a failing grade.

LEARNING OUTCOMES: By the end of the course, students are able to:

- recognize the fundamental principles of social, environmental and economic sustainability;
- identify problem areas where unsustainable practices are prevalent and destructive;
- analyze complex problems utilizing the precepts of systems analysis;
- apply a critical sustainability lens to current events; governmental and inter-governmental policy, and other institutions of modern life;
- reflect on their own values regarding a sustainable life-style, and integrate meaningful sustainable practices in their lifestyle

CONTENT:

Session No.	Required reading:
Session 1: What IS sustainability, anyway?	
Session 2: Systems Thinking: A Primer	Capra, F., Luisi, P.L. (2014). The ecological dimension of life. In <i>The Systems View of Life: A Unifying Vision</i> (Ch. 16, p. 341-362).
Session 3: Design, Re-Design and New Industrial Paradigms	McDonough, William & Braungart Michael (1998). The NEXT Industrial Revolution. <i>The Atlantic</i> 282 (4): 82-92. Available online at: http://www.ratical.org/co-globalize/nextIndusRev.pdf
Session 4: Invited Speaker from a Local Coop. committed with the Agenda 21 in Barcelona.	Franquesa, T. (2012). Barcelona's Agenda 21. 10 Years of Citizen Commitment to Sustainability. City, Environment and Education. Monograph: p.66-70. Available online at: http://www.sostenibilitatbcn.cat/attachments/article/413/TFranquesa_A_21L_Barcelona%20LA21Experience_Educating%20Cities.pdf Barcelona City Council, 2012. Citizen Commitment to Sustainability 2012-2022. Ed. Barcelona City Council. (p.5-9, p.30-31). Available online at: http://www.sostenibilitatbcn.cat/attachments/article/413/Commitment_22_UK_web.pdf
Session 5: Sustainability Action Plan for IES Abroad – Barcelona.	Various Authors. (2009-2014). <i>Sustainability Action Plans</i> . Final papers from previous semesters of ESSO350. Edited by X. de Pedro. cc-by-sa. Available online at: http://sustainability.seeds4c.org
Session 6: Policy, Regulations, Incentives and Voluntary Programs for Sustainability.	Brown, Lester R. (2009). Can We Mobilize Fast Enough?. In <i>Plan B 4.0: Mobilizing to Save Civilization</i> . Norton, W. W. & Company, Inc. (Ch. 10, p.143-167). Available online at: http://www.earth-policy.org/images/uploads/book_files/pb4ch10.pdf
Session 7: The Human Factor: Demographics and Social Trends	Bowerman, T. (2014). How much is too much? A public opinion research perspective. <i>Sustainability: Science, Practice, & Policy</i> . Volume 10, Issue 1, p.1-15. Available online at: http://sspp.proquest.com/static_content/vol10iss1/1209-044.bowerman.pdf Ehrlich, PR. (2010). The MAHB, the Culture Gap, and Some Really Inconvenient Truths. <i>PLoS Biol</i> 8(4):e1000330. Available online at: http://www.plosbiology.org/article/fetchObject.action?uri=info%3Adoi%2F10.1371%2Fjournal.pbio.1000330&representation=PDF
Session 8: Agriculture: Our Relationship with the Land	FAO (2002). Prospects for the Environment. In <i>World agriculture: towards 2015/2030</i> . Summary report: p.75-81. Earthscan, London. Available online at: ftp://ftp.fao.org/docrep/fao/004/y3557e/y3557e.pdf
<i>DiscoverIES: Course related excursion to an Organic Farm</i>	(on a FRIDAY; full day)
Session 9: Forests, Fisheries and Disappearing Species	Brown, Lester R. (2009). Restoring the Earth. In <i>Plan B 4.0: Mobilizing to Save Civilization</i> . Norton, W. W. & Company, Inc. (Ch. 8, p.192-215). Available online at: http://www.earth-policy.org/images/uploads/book_files/pb4ch08.pdf
Session 10: Environmental Systems, Social Systems and Human Health	World Health Organization (2005). <i>Ecosystems and Human Well-Being Health Synthesis</i> , (Overview, p. 1 – 10). Available online at: http://www.who.int/globalchange/ecosystems/ecosys.pdf Ewing, David (2006). The Pollution Within. <i>National Geographic</i> (7 pp) Available: http://www7.nationalgeographic.com/ngm/0610/feature4/index.html

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Session 11: <i>Climate Change</i>	GreenFacts (2007). <i>Scientific facts on Climate Change. 2007 Update</i> . Source document: Intergovernmental Panel on Climate Change (IPCC): "Fourth Assessment Report (AR4)" (2007). Summary & Details: GreenFacts (2007) (Level 1 - 2007 Update, 16 pp). Available online at: http://www.greenfacts.org/en/climate-change-ar4/climate-change-ar4-foldout.pdf
Session 12: MID-TERM EXAM	
Session 13: Local Community Networks	Wheeler, David, et al. (2005) Creating Sustainable Local Enterprise Networks. <i>Sloan Management Review</i> , 47 (1):33-40. Available online: http://www.honeycarefrica.com/PDF/Sustainable_Local_Enterprise_Networks.pdf Shuman, Michael (2006). <i>The Small-Mart Revolution</i> . San-Francisco: Berrett-Koehler (Ch. 2, p.39-62).
Session 14: Urban Planning, Architecture and Transportation	Brown, Lester R. (2009). Designing Cities for People. In <i>Plan B 4.0: Mobilizing to Save Civilization</i> . Norton, W. W. & Company, Inc. (Ch. 6, p.143-167). Available online at: http://www.earth-policy.org/images/uploads/book_files/pb4ch06.pdf
Session 15: Class on site: 'Can Masdeu' (squatted farm house)	Cordingley, L. (2004). Can Masdeu: Rise of the Rurbano revolution. p53-68. Available online at: http://www.inthefield.info/rurbano_revolution.pdf
Session 16: Permaculture Ethics & Design Principles	Holmgren, D. (2007). <i>Essence of Permaculture</i> . 23pp. Ed. Holmgren Design Services. Available online at: http://www.holmgren.com.au/DLFiles/PDFs/Essence_of_PC_eBook.pdf
Session 17: Free/Libre Open Source Software (FLOSS) and Hardware	Sowe, S.K., Parayil, G. & Sunami, A. (2012). Introduction. In <i>Free and Open Source Software Technology for Sustainable Development</i> . United Nations University Press. (p. 1-3). Available online at: http://i.unu.edu/media/unu.edu/publication/27948/1217-FOSS-SAMPLE-CHAPTER.pdf Farmer, J. (2007). <i>Sustainability study. A case study review of open source sustainability models. pp. 3, 10-14 (out of 60)</i> . Available online at: http://www.jisc.ac.uk/media/documents/programmes/distributedelearnig/sustainabilitystudy-1%5B1%5D.0.pdf
Session 18: Designing a Sustainable System for Human Knowledge	Lessig, L. (2004). <i>Free culture, How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity</i> . The Penguin Press. (p.170-173 + p.282-286). http://www.free-culture.cc/freeculture.pdf Pearce, J.M. (2012). The case for open source appropriate technology. <i>Environ Dev Sustain</i> (2012) 14:425–431. Available online at: http://link.springer.com/article/10.1007%2Fs10668-012-9337-9
Session 19: The Wisdom and Virtue of Peer-based Crowds	Various Authors. <i>The Wisdom of Crowds</i> , Wikipedia. Available: http://en.wikipedia.org/wiki/The_Wisdom_of_Crowds (Accessed March 28 th , 2011). cc-by-sa, based on the work Suroviewcki, J. (2004) <i>The Wisdom of Crowds</i> . Brown ISBN 0-316-86173-1. Benkler, Yochai & Nissenbaum, Helen (2006) Commons-based Peer Production and Virtue. <i>The Journal of Political Philosophy: Volume 14, Number 4, p. 394–419</i> . Available online at: http://www.nyu.edu/projects/nissenbaum/papers/jopp_235.pdf
Session 20: Class on site: Clean Technology and Design	Brown, Lester R. (2009). Stabilizing Climate: An Energy Efficiency Revolution. In <i>Plan B 4.0: Mobilizing to Save Civilization</i> . Norton, W. W. & Company, Inc. (Ch. 4, p.79-108). Available online at: http://www.earth-policy.org/images/uploads/book_files/pb4ch04.pdf
Session 21: Ecological	Fournier, Valérie. (2008). Escaping from the economy: the politics of

Economics	<p>degrowth . International Journal of Sociology and Social Policy, Vol. 28 No. 11/12, (pp. 528-545). Available online at: http://www.web.ca/~bthomson/degrowth/fournier_the_politics_of_degrowth_13mar08.pdf</p> <p>Kennedy, Margrit (2008). If money rules the world – who rules money? A case for complementary currencies. Forum CSR international, Vol 28. pp 66-69. Available online at: http://www.margritkennedy.de/media/art_forum_csr_international_1_2_008_28.pdf</p> <p>Lyon, S. (2014) Fair Trade Towns USA: growing the market within a diverse economy. Journal of Political Ecology Vol. 21, 2014 . Available online at: http://jpe.library.arizona.edu/volume_21/Lyon.pdf</p>
Session 22: Presentation on current topics + Peer Review	<p>Various Authors. (2016). <i>Sustainability Design Reports</i>. Final papers from current semester of ESSO352. Available online at: http://sustainability.seeds4c.org</p>
Session 23: Energy: Sources, Trends, and their Implications	<p>Brown, Lester R. (2009). Stabilizing Climate: Shifting to Renewable Energy. In <i>Plan B 4.0: Mobilizing to Save Civilization</i>. Norton, W. W. & Company, Inc. (Ch. 5, p.109-142). Available online at: http://www.earth-policy.org/images/uploads/book_files/pb4ch05.pdf</p>
Session 24: Business, Biomimicry and Sustainable Development	<p>Senge, Peter & Carstedt, Goran (2001) Innovating Our Way to the Next Industrial Evolution. <i>Sloan Management Review</i>, 42(2): 24-38. Available online at: http://www.ci.oswego.or.us/plan/Sustainability/Steering_Committee_Handouts/Innovating%20Our%20Way%20to%20the%20Next%20Industrial%20Revolution-MIT-SMR.pdf</p>

Final Exam

REQUIRED READING:

- Barcelona City Council, 2012. Citizen Commitment to Sustainability 2012-2022. Ed. Barcelona City Council. (p. 5-9, p.30-31). Available online at: http://www.sostenibilitatbcn.cat/attachments/article/413/Commitment_22_UK_web.pdf
- Benkler, Yochai & Nissenbaum, Helen (2006) Commons-based Peer Production and Virtue. The Journal of Political Philosophy: Volume 14, Number 4, p. 394-419. Available online at: http://www.nyu.edu/projects/nissenbaum/papers/jopp_235.pdf
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- Brown, Lester R. (2009). Can We Mobilize Fast Enough?. In *Plan B 4.0: Mobilizing to Save Civilization*. Norton, W. W. & Company, Inc. (Ch. 10, p.143-167). Available online at: http://www.earth-policy.org/images/uploads/book_files/pb4ch10.pdf
- Brown, Lester R. (2009). Designing Cities for People. In *Plan B 4.0: Mobilizing to Save Civilization*. Norton, W. W. & Company, Inc. (Ch. 6, p.143-167). Available online at: http://www.earth-policy.org/images/uploads/book_files/pb4ch06.pdf
- Brown, Lester R. (2009). Restoring the Earth. In *Plan B 4.0: Mobilizing to Save Civilization*. Norton, W. W. & Company, Inc. (Ch. 8, p.192-215). Available online at: http://www.earth-policy.org/images/uploads/book_files/pb4ch08.pdf
- Brown, Lester R. (2009). Stabilizing Climate: An Energy Efficiency Revolution. In *Plan B 4.0: Mobilizing to Save Civilization*. Norton, W. W. & Company, Inc. (Ch. 4, p.79-108). Available online at: http://www.earth-policy.org/images/uploads/book_files/pb4ch04.pdf
- Brown, Lester R. (2009). Stabilizing Climate: Shifting to Renewable Energy. In *Plan B 4.0: Mobilizing to Save Civilization*. Norton, W. W. & Company, Inc. (Ch. 5, p.109-142). Available online at: http://www.earth-policy.org/images/uploads/book_files/pb4ch05.pdf

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- Farmer, J. (2007). Sustainability study. A case study review of open source sustainability models. pp. 3, 10-14 (out of 60). Available online at: <http://www.jisc.ac.uk/media/documents/programmes/distributedelearning/sustainabilitystudy-1%5B1%5D.0.pdf>
- Fournier, Valérie. (2008). Escaping from the economy: the politics of degrowth . *International Journal of Sociology and Social Policy*, Vol. 28 No. 11/12, (pp. 528-545). Available online at: http://www.web.ca/~bthomson/degrowth/fournier_the_politics_of_degrowth_13mar08.pdf
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- Holmgren, D. (2007). *Essence of Permaculture*. 23pp. Ed. Holmgren Design Services. Available online at: http://www.holmgren.com.au/DLFiles/PDFs/Essence_of_PC_eBook.pdf
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Various Authors. The Wisdom of Crowds, Wikipedia. Available: http://en.wikipedia.org/wiki/The_Wisdom_of_Crowds (Accessed March 28th, 2011). cc-by-sa, based on the work Suroviewcki, J. (2004) *The Wisdom of Crowds*. Brown ISBN 0-316-86173-1.

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World Health Organization (2005). *Ecosystems and Human Well-Being Health Synthesis*, (Overview, p. 1 - 10). Available online at: <http://www.who.int/globalchange/ecosystems/ecosys.pdf>

RECOMMENDED READING:

Brower, Michael & Leon, Warren (1999). *The Consumer's Guide to Effective Environmental Choices: Practical Advice from the Union of Concerned Scientists*. Three Rivers Press.

Capra, Fritjof (2004). *The Hidden Connections: A Science for Sustainable Living*. Anchor.

Capra, Fritjof & Luisi, Pier Luigi (2014). *The Systems View of Life: A Unifying Vision*. Cambridge University Press.

Carson, Rachel (1964) *Silent Spring*. Crest

Cobb, John. & Daly, Herman E. (1997) *For the Common Good*. Beacon Press.

Diamond, Jared (2004). *Collapse: How Societies Choose to Fail or Succeed*. Viking

Dr. Seuss (1971). *The Lorax*. Random House.

Frankel, Carl (1998). *In Earth's Company: Business, Environment, and the Challenge of Sustainability*. Conscientious Commerce.

Hawken, Paul (1993). *The Ecology of Commerce: A Declaration of Sustainability*. Collins.

Leopold, Aldo (1968) *A Sand County Almanac*. Oxford University Press.

McDonough, William & Braungart, Michael (2002). *Cradle to Cradle. Remaking the way we make things*. North Point Press.

Quinn, Daniel (1992) *Ishmael: An Adventure of the Mind and Spirit*. Bantam/Turner.

Schumacher, E.F. (1973). *Small Is Beautiful: Economics as if People Mattered*. Harper-Collins.

Surowiecki, J. (2004). *The Wisdom of Crowds: Why the Many Are Smarter Than the Few and How Collective Wisdom Shapes Business, Economies, Societies and Nations* Little, Brown ISBN 0-316-86173-1)