Jan 5, 2017

Yale-NUS College

YID2204: ECOLOGICAL ECONOMICS
Semester 2, AY 2016-17
Course Syllabus

Instructor: **Marvin Joseph F. Montefrio**
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Office hours: Mondays and Thursdays, 10:30 – 12 nn (by appointment)
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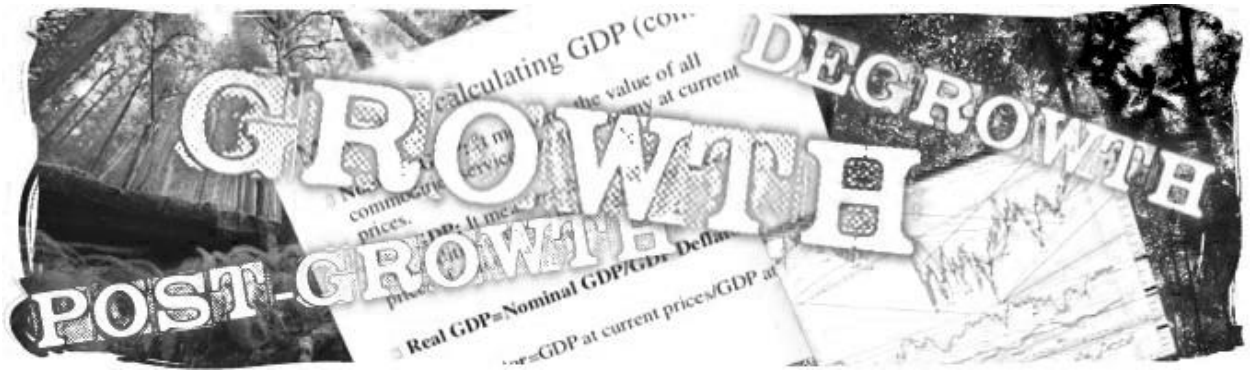
Course location and hours: RC2-02-02 Classroom 12, Tuesdays and Fridays, 10:30 – 12 nn



Conventional approaches to understanding and solving complex social and environmental problems are still pervasive in our society. Decision-makers continue to prescribe policy solutions that are rigid and deterministic; economies throughout the world still regard economic growth as the ultimate goal rather than a means to achieving welfare; and our faith on the same tools that contributed to many of the problems we now face remain strong. Meanwhile, the ever-burgeoning human economic enterprise is exceeding its biophysical limits, as evidenced by the worsening global climate change, biodiversity loss, soil erosion, fresh water depletion, among others. In this course, we will explore new ways of thinking about how we organize the production, distribution and consumption of the goods and services that nourish our everyday life. Here we will learn new paradigms that challenge the fundamental tenets the human economic enterprise is built upon.

This course builds on Introduction to Environmental Studies and introduces us to the burgeoning inter- and trans-disciplinary field of ecological economics, an area of scholarship that combines knowledge from ecology, physics, philosophy, ethics, behavioral sciences, public policy, economics, among others. We will explore in this course the theoretical, philosophical, and methodological foundations of ecological economics vis-à-vis "neoclassical" or "mainstream" economics. The objectives of the course are as follows:

1) to understand the difference between "neoclassical"/environmental economics and ecological economics, as well as the rationale for the emergence of an ecological economic thought;
2) to learn the theoretical and philosophical foundations of ecological economics, in particular the concepts of biophysical limits, co-evolutionary complex adaptive

systems, uncertainty and surprise, methodological pluralism, inter- and trans-disciplinarity, among others; and

3) to be introduced to the emerging alternative ways of analyzing socio-ecological problems and crafting policy solutions based on the principles of ecological economics.

This course is organized around interactive lectures, class discussions (some student-facilitated), workshops, and simulations. Students are expected to learn not just the main concepts and theories on ecological economics, but also the value of engaging in inter- and trans-disciplinary communication and collaboration crucial in the practice of environmental (development) careers. Students will also learn to analyze and write critical essays and case study analyses, as well as to articulate their ideas in class.

Readings:

Most of the readings will be derived from the following texts:

- Faber, M., Manstetten, R., Proops, J. (1998). *Ecological Economics: Concepts and Methods*. Edward Elgar.
- Norgaard, R.B. (1994). *Development betrayed: The end of progress and a coevolutionary revisioning of the future.* London, Routledge. [ebook available in NUS library]

Additional readings will include the following:

- Alcamo, J. (2009). *Environmental futures: The practice of environmental scenario analysis*. Elsevier.
- Alvey, J.E. (1999). A short history of economics as a moral science. *Journal of Markets & Morality*, 2, 53-73.
- Anderson, B., M'Gonigle, M. (2012). Does ecological economics have a future? Contradiction and reinvention in the age of climate change. *Ecological Economics*, 84, 37-48.
- Bredin, Y.K., Lindhjem, H., van Dijk, J., Linnell, J.D.C. (2015). Mapping value plurality towards ecosystem services in the case of Norwegian wildlife management: A Q Analysis. *Ecological Economics*, 118, 198-206.
- Brown, P.G., and Timmerman, P. (2015). *Ecological economics for the anthropocene: An emerging paradigm*. New York, NY: Columbia University Press.
- Buchholz, T., Rametsteiner, E., Volk, T.A., Luzadis, V.A. (2009). Multi criteria analysis for bioenergy systems assessments. *Energy Policy*, 37, 484-495.
- Colander, D., Hold, R.P.F., Rosser, J.B. (2004). The changing face of mainstream economics. *Review of Political Economy*, 16, 485-499.
- Colander, D. (2000). The death of neoclassical economics. *Journal of the History of Economic Thought*, 22, 127-143.
- Costanza, R., de Groot, R., Sutton, P., van der Ploeg, S., Anderson, S.J., Kubiszewski, I., Faarber, S., Turner, R.K. (2014). Changes in the global value of ecosystem services. *Global Environmental Change*, 26, 152-158.
- Daly, H. (2008). Growth and development: Critique of a credo. *Population and Development Review*, 34, 511-518.

- Dietz, S., Neumayer, E. (2007). Weak and strong sustainability in the SEEA: Concepts and measurements. *Ecological Economics*, 61, 617-262.
- Durance, P., Godet, M. (2010). Scenario building: Uses and abuses. *Technological Forecasting & Social Change*, 77, 1488-1492
- Field, B.C., Field, M.K. (2009). *Environmental economics: an introduction*. Boston, MA: McGraw-Hill.
- Folke, C. (2006). Resilience: The emergence of a perspective for social-ecological systems analyses. *Global Environmental Change*, 16, 253-267.
- Fontana, V., Radtke, A., Fedrigotti, V.B., Tappeiner, U., Tasser, E., Zerbe, S., Buchholz, T. (2013). Comparing land-use alternatives: Using the ecosystem services concept to define a multi-criteria decision-analysis. *Ecological Economics*, 93, 128-136.
- Gallemore, C., Di Gregorio, M., Moeliono, M., Brockhaus, M., Prasti, R.D. (2015). Transaction costs, power, and multi-level forest governance in Indonesia. *Ecological Economics*, 114, 168-179.
- Gowdy, J., Erickson, J. (2005). *The approach of ecological economics*. Cambridge Journal of Economics, 29, 207-222.
- Hadorn, G.F., Bradley, D., Pohl, C., Rist, S., Wiesmann, U. (2006). Implications of transdisciplinarity for sustainability research. *Ecological Economics*, 60, 119-128.
- Hattam, C., Bohnke-Henrichs, A., Borger, T., Burdon, D., Hadjimichael, M., Delaney, A., Atkins, J.P., Garrard, S., Austen, M.C. (2015). Integrating methods for ecosystem service assessment and valuation: Mixed methods or mixed messages? *Ecological Economics*, 120, 126-138.
- Healy, H., Martinez-Alier, J., Temper, L., Walter, M., Gerber, J-L. (2013). *Ecological economics from the ground up*. New York, NY: Routledge. Introduction.
- Jahn, T., Bergmann, M., Keil, F. (2012). Transdisciplinarity: Between mainstreaming and marginalization. *Ecological Economics*, 79, 1-10.
- Kallis, G., Norgaard, R.B. (2010). Coevolutionary ecological economics. *Ecological Economics*, 69, 690-699.
- Lele, S., Norgaard, R.B. (2005). Practicing interdisciplinarity. *Bioscience*, 55, 967-975.
- Liu, J., Dietz, T., Carpenter, S.R., Alberti, M., Folke, C., Moran, E., et al. (2007). Complexity of coupled human and natural systems. *Science*, 317, 1513-1516.
- Meadows, D.H. (2008). *Thinking in systems: A primer*. White River Junction, VT: Chelsea Green Publishing.
- Montefrio, M.J.F., Sonnenfeld, D.A., Luzadis, V.A. (2015). Social construction of the environment and smallholders farmers' participation in 'low-carbon', agro-industrial crop production contracts in the Philippines. *Ecological Economics*, 116, 70-77.
- Moreno-Penaranda, R., Kallis, G. (2010). A coevolutionary understanding of agroenvironmental chance: A case-study of a rural community in Brazil. *Ecological Economics*, 69, 770-778.
- Neuteleers, S., Engelen, B. (2015). Talking money: How market-based valuation can undermine environmental protection. *Ecological Economics*, 117, 253-260.
- Norgaard, R. (1989). The case for methodological pluralism. *Ecological Economics*, 1, 37-57.
- Raymond, C.O., Kenter, J.O., Plieninger, T., Turner, N.J., Alexander, K.A. (2014). Comparing instrumental and deliberative paradigms underpinning the assessment of social values for cultural ecosystem services. *Ecological Economics*, 107, 145-156.

- Spash, C.L. (2013). The shallow or the deep ecological economics movement? *Ecological Economics*, 93, 351-362.
- Spash, C.L. (2013). The shallow or the deep ecological economics movement? *Ecological Economics*, 93, 351-362.
- Spash, C.L. (2012). New foundations for ecological economics. *Ecological Economics*, 77, 36-47.
- Spash, C. (1999). The development of environmental thinking in economics. *Environmental Values*, 8, 413-435.
- Van Hecken, G., Bastiaensen, J., Windey, C. (2015). Towards a power-sensitive and socially-informed analysis of payment for ecosystem services (PES): Addressing the gaps in the current debate. *Ecological Economics*, 120, 117-125.

Assignments and Grading

Class Participation (20%)

Students are expected to read all the assigned materials prior to attending classes and to participate in all discussions. As Yale-NUS students, they are expected to be not just passive consumers of information. Instead, they are expected to *actively engage* with the readings and discussions. Class participation grade will be based on the contribution students make (i.e. the questions, comments, answers, and feedback given) towards the learning experience of their classmates.

Students (in pairs) will also be asked to lead and facilitate class discussions. Facilitation does not mean just summarizing the readings and dominating class discussions. Students should assume that everyone has read all assigned articles before coming to class. Facilitation will be graded based on how well students are able to direct and elicit conversations and debates surrounding the main points of the assigned readings. Discussion should focus on the readings, with **minimal** digression to other topics. The use of innovative pedagogical methods is encouraged. Facilitation will constitute 10 out of the 20 per cent of grading for this part.

Critical Analytical Essay (20%)

Part of the course is for students to learn to critically examine scholarly materials. For this assignment, students will be required to write **two (2)** critical analytical essays reviewing the following: 1) an analytical report from the grey literature; and 2) a scholarly analytical writing in the journal, Ecological Economics. The critique should be well-structured and focused on just **one** argument that points to one of the key messages of the article being examined. Students are expected to draw from the concepts and theories used in ecological economics when making their arguments. The critical review should be no longer than 750 words.

Theory Exam (20%)

There will be a closed-book exam to test students' ability to synthesize their understanding of fundamental theories and concepts in ecological economics. This will be administered in class in the middle of the semester. The coverage of the exam will be on topics discused in the weeks before the scheduled test.

Simulation Exercise (10%)
Students will participate in a simulation exercise for them to experience how it is like to be part of a multi-criteria decision-making process. Each student will be assigned a role that s/he will embody during the simulation. S/he would have to conduct research in advance in lieu of the role assigned for the simulation. Preparation materials derived from that research will be submitted for grading. After the simulation, each student will be asked to write a 500-word reflection paper to synthesize what they learned from the exercise. The reflection paper will be submitted for grading.

Commentary Article (20%)
Journals like Ecological Economics usually accommodate commentary submissions from authors. This exercise allows students to experience writing a commentary piece for a hypothetical submission to an academic journal. They will be given the opportunity to explore a substantive topic of choice and engage with an ecological economic concept/theory of interest. The commentary essay should be no more than 3000 words. A 2-page article proposal should be submitted some time in the middle of the semester.

Grading Breakdown

Class Participation (including class facilitation=10%)	20%
Critical Analytical Essay (10% each)	20%
Theory Exam	20%
Simulation Exercise • Preparation and participation (5%) • Reflection (5%)	10%
Commentary Article • Article proposal (5%) • Final submission (25%)	30%
TOTAL	**100%**

Course Policies
The teaching methods used in the course require full participation of students. Attendance is required and everyone is expected to participate fully during each class meeting. Therefore, students are expected to have done a generous reading of the course material ahead of time. They should also be prepared to engage in meaningful debates and conversations with their classmates and instructor.

The critical analytical essays, simulation materials, and the commentary article must be submitted electronically as an MS Word document via Canvas on the day they are due. Late assignments lose one grade step for each day. Meaning, an assignment graded 'A' at the outset will be marked down to 'B+' if submitted two days after the deadline.

Students must do the class facilitation on the day they are assigned. A score of zero will be given if a student is not prepared to do the facilitation on their assigned day. If they have a valid excuse (e.g. unavoidable work- or family-related conflict in schedule), students need to contact their instructor ASAP to discuss possible resolutions.

Other class policies will be negotiated on the first day of class.

Academic Dishonesty

Academic honesty is essential in upholding the integrity of knowledge production. Just as their instructors and academic mentors, students are expected to uphold the highest standards of academic honesty. Students should note that anything submitted for this class is expected to represent *original* work. Moreover, a work submitted for another class (either in part or whole) will not be accepted. If a student wishes to build on from previous work, he/she should make an arrangement to discuss the matter with the instructor. Proper citation and referencing are expected. For this modules, students are required to use the APA format (see https://owl.english.purdue.edu/owl/resource/560/01/ for reference). It is the responsibility of the student to refer to the Yale-NUS College Handbook of Academic Integrity and the websites below if they are unclear of what constitutes academic dishonesty and plagiarism.

College policies on academic integrity:
https://studentlife.yale-nus.edu.sg/policies/academic-integrity/

Yale-NUS library information on plagiarism:
http://library.yale-nus.edu.sg/plagiarism/)

The policies of the college require instructors to refer any suspected instances of academic dishonesty to the Academic Integrity Committee for assessment and adjudication. Any form of cheating or plagiarism will lead to a course grade of F and other disciplinary actions.

Schedule

Date	Topic/Assignment
Week 1	
Jan 10 (Tues)	**Course Overview and Introduction** • Introductions/ice-breaker • Discussion (negotiations) on syllabus • Economism and the current economic system Required Readings: Norgaard, R. (2015). The church of economism and its discontents. Great transition initiative.
Jan 13 (Fri)	**Brief Historization of Economic Thought** • Brief historical progression of economic thinking • From moral philosophy to positive science • Birth of neoclassical economics and modern economics Required Readings: Alvey, J.E. (1999). A short history of economics as a moral science. *Journal of Markets & Morality*, 2, 53-73. Colander, D. (2000). The death of neoclassical economics. Journal of the *History of Economic Thought*, 22, 127-143. Weintraub, E.R. (2002). Neoclassical economics. The Concise Encyclopedia of Economics. Library of Economics and Liberty.
Week 2	
Jan 17 (Tues)	**Quick Review of "Neoclassical" and Environmental Economics: Part 1** • Review of microeconomic concepts (Fundamental tenets of "neoclassical" economics, marginal cost/utility, Pareto Efficiency, cost-benefit analysis, risk analysis) Required Readings: TBD
Jan 20 (Fri)	**Quick Review of "Neoclassical" and Environmental Economics: Part 2** • Review of selected environmental economic concepts (dealing with market failures and externalities, revisiting cost-benefit analysis, willingness to pay and pricing mechanisms, and discounting) Required Readings: Field, B.C., Field, M.K. (2009). *Environmental economics: an introduction*. Boston, MA: McGraw-Hill. Chapter 1. Endres, A. (2012). *Environmental economics: Theory and practice*. Cambridge University Press. Part one

Week 3	
Jan 24 (Tues)	**Ecological Economics Thinking: A Primer** • What is ecological economics? • How does it differ from mainstream economics? • The nested system • Pre-analytical visions (full world vs. empty world) **Guidelines on the Critical Analytical Essay to be given out** <u>Required Readings</u>: Spash, C. (1999). The development of environmental thinking in economics. *Environmental Values*, 8, 413-435. Gowdy, J., Erickson, J.D. (2005). The approach of ecological economics. *Cambridge Journal of Economics*, 29, 207-222.
Jan 27 (Fri)	**Biophysical Limits to Growth** • Limits and laws of thermodynamics • Entropy as a unifying concept <u>Required Readings</u>: Faber, M., et al. (1998). Chapters 6 and 7
Week 4	
Jan 31 (Tues)	**Systems Thinking** • How do systems work? • What are emergent properties? • How do systems surprise us? • Systems diagram exercise **Guidelines on the Commentary Article to be given out** <u>Required Readings</u>: Meadows, D.H. (2008). Thinking in systems: A primer. White River Junction, VT: Chelsea Green Publishing. Chapters 1, 2 and 4
Feb 3 (Fri)	**Evolution, Surprise, and Uncertainty** • Evolutionary Principle • Anatomy of ignorance and surprise <u>Required Readings</u>: Faber, M., et al. (1998), Chapters 8 and 11

Week 5	
Feb 7 (Tues)	**Control and Maladaptive Determinisms** • Faustian imperative of control and its philosophical roots • Maladaptive determinism <u>Required Readings</u>: Faber, M. et al. (1998), Chapter 4 Norgaard, R. (1994). Chapters 5-7
Feb 10 (Fri)	**Co-evolutionary Adaptive Systems and Development** • The co-evolutionary process in social and ecological systems • Co-evolutionary process and development **Due: Critical Analytical Essay 1 due on February 12 (Sunday) at 11:59 pm** <u>Required Readings</u>: Norgaard, R. (1994). Chapters 3 and 4 Kallis, G., Norgaard, R. (2010). Coevolutionary ecological economics. *Ecological Economics*, 69, 690-699. <u>Supplementary Readings</u>: Norgaard, R.B. (1994). Chapter 10 Kallis, G. (2010). Coevolution in water resource development: The vicious cycle of water supply and demand in Athens, Greece. *Ecological Economics*, 69, 796-809. Moreno-Penaranda, R., Kallis, G. (2010). A coevolutionary understanding of agroenvironmental chance: A case-study of a rural community in Brazil. *Ecological Economics*, 69, 770-778.
Week 6	
Feb 14 (Tues)	**Resilience and Complexity** • Social-ecological Systems, complexity, resilience and adaptive capacity **Practice quiz** <u>Required Readings</u>: Liu, J., et al. (2007). Complexity of coupled human and natural systems. *Science*, 317, 1513-1516. Folke, C. (2006). Resilience: The emergence of a perspective for social-ecological systems analyses. *Global Environmental Change*, 16, 253-267. <u>Supplementary Readings</u>: Folke, C., et al. (2002). Resilience and sustainable development: Building adaptive capacity in a world of transformations. *Ambio*, 31, 437-440.

Feb 17 (Fri)	**No class** **Due: Commentary article proposal on February 17 (Sunday) at 11:59 pm**
Week 7	**Recess Week! Feb 18-26**
Week 8	
Feb 28 (Tues)	**Methodological Pluralism and Interdisciplinarity** • Democratic knowledge and methodological pluralism **Guidelines on the Simulation to be given out** Required Readings: Norgaard, R. (1989). The case for methodological pluralism. *Ecological Economics*, 1, 37-57. Lele, S., Norgaard, R. (2005). Practicing interdisciplinarity. *Bioscience*, 55, 967-975. Spash, C.L. (2012). New foundations for ecological economics. *Ecological Economics*, 77, 36-47. (Read only section on "Case Against Methodological Pluralism.")
Mar 3 (Fri)	**Transdisciplinarity and Democratic Knowledge** • Transdisciplinary endeavors and how it differs from interdisciplinarity • The democratic principle in knowledge production Required Readings: Jahn, T., Bergmann, M., Keil, F. (2012). Transdisciplinarity: Between mainstreaming and marginalization. *Ecological Economics*, 79, 1-10. Hadorn, G.F., et al. (2006). Implications of transdisciplinarity for sustainability research. *Ecological Economics*, 60, 119-128.
	Make-up class (Theory Exam)
Week 9	
Mar 7 (Tues)	**Questioning Growth, Well-Being, and its Metrics** • Relationship between growth and well-being • Issues with conventional measures of national income and economic growth • Alternative measurements of macro-economic growth and development Readings: Daly, H. (2008). Growth and development: Critique of a credo. *Population and Development Review*, 34, 511-518. Dietz, S., Neumayer, E. (2007). Weak and strong sustainability in the SEEA: Concepts and measurements. *Ecological Economics*, 61, 617-262. O'Donnell, G., Oswald, A.J. (2015). National well-being policy and a weighted approach to human feelings. *Ecological Economics*, 120, 59-70.

Mar 10 (Fri)	**Questioning Human Behavior** • Challenging the rational, self-interested being • Perspectives from behavioral economics • Perspectives from other sciences of human behavior **Due: Preparatory simulation materials on March 12 (Sunday) at 11:59 pm** Required Readings: Montefrio, M.J.F., et al. (2015). Social construction of the environment and smallholders farmers' participation in 'low-carbon', agro-industrial crop production contracts in the Philippines. *Ecological Economics*, 116, 70-77.
Week 10	
Mar 14 (Tues)	**Questioning Valuation of Ecosystem Services** • Rationale for valuation of nature and ecosystem services • Crtique of (monetary) valuation • Possible alternatives to monetary valuation Required Readings: Costanza, R., et al. (2014). Changes in the global value of ecosystem services. *Global Environmental Change*, 26, 152-158. Hattam, C., et al. (2015). Integrating methods for ecosystem service assessment and valuation: Mixed methods or mixed messages? *Ecological Economics*, 120, 126-138. Neuteleers, S., Engelen, B. (2015). Talking money: How market-based valuation can undermine environmental protection. *Ecological Economics*, 117, 253-260. Supplemental Readings: Norgaard, R. (2010). Ecosystem services: From eye-opening metaphor to complexity blinder. *Ecological Economics*, 69, 1219-1227.
Mar 17 (Fri)	**Non-monetary Techniques in Decision-making: Part 1** • Instrumental versus deliberative paradigm • Q Methodology/Analysis Required Readings: Bredin, Y.K., et at. (2015). Mapping value plurality towards ecosystem services in the case of Norwegian wildlife management: A Q Analysis. *Ecological Economics*, 118, 198-206. Raymond, C.M., et al. (2014). Comparing instrumental and deliberative paradigms underpinning the assessment of social values for cultural ecosystem services. *Ecological Economics*, 107, 145-156.

Week 11	
Mar 21 (Tues) Mar 24 (Fri)	**Non-monetary Techniques in Decision-making: Part 2** • Multi-criteria analysis simulation (we will find a 3-hour block to do the simulation Required Readings: Buchholz, T., et al. (2009). Multi criteria analysis for bioenergy systems assessments. *Energy Policy*, 37, 484-495. Fontana, V., et al. (2013). Comparing land-use alternatives: Using the ecosystem services concept to define a multi-criteria decision-analysis. *Ecological Economics*, 93, 128-136.
Week 12	
Mar 28 (Tues)	**Non-monetary Techniques in Decision-making: Part 3** • Simulation debriefing • Scenario building and the possible role of the humanities **Due: Reflection on simulation before class** Required Readings: Durance, P., Godet, M. (2010). Scenario building: Uses and abuses. *Technological Forecasting & Social Change*, 77, 1488-1492 Alcamo, J. (2009). *Environmental futures: The practice of environmental scenario analysis*. Elsevier. Chapters 3 and 5.
Mar 31 (Fri)	**Ecological Economics and Analysis of Power** • Is ecological economics apolitical? • Links between ecological economics and political ecology and power analysis Required Readings: Gallemore, C., Di Gregorio, M., Moeliono, M., Brockhaus, M., Prasti, R.D. (2015). Transaction costs, power, and multi-level forest governance in Indonesia. *Ecological Economics*, 114, 168-179. Van Hecken et al. (2015). Towards a power-sensitive and socially-informed analysis of payment for ecosystem services: Addressing the gaps in the current debate. *Ecological Economics*, 120, 117-125.
Week 13	
Apr 4 (Tues)	**Bringing Ethics Back in Economics** • Various ethical and justice perspectives in economics Required Readings: Brown, P.G., Timmerman, P. (2015). Ecological economics for the anthropocene: an emerging paradigm. New York, NY: Columbia University Press. Chapters 1 and 3.

Apr 7 (Fri)	**Practicing Ecological Economics from Ground Up** • Ecological Economics as practiced by civil society **Due: Critical Analytical Essay 2 on April 9 (Sunday) at 11:59 pm** Readings: Healy et al. (2013). *Ecological economics from the ground up*. New York, NY: Routledge. Introduction. * Students select another chapter in the book to report in class
Week 14	
Apr 11 (Tues)	**The Future of Economics/Ecological Economics** • How is the field of economics shaping? • How is the field of ecological economics shaping? • How do we move forward? Readings: Colander, D., Hold, R.P.F., Rosser, J.B. (2004). The changing face of mainstream economics. *Review of Political Economy*, 16, 485-499. Anderson, B., M'Gonigle, M. (2012). Does ecological economics have a future? Contradiction and reinvention in the age of climate change. *Ecological Economics*, 84, 37-48. Spash, C.L. (2013). The shallow or the deep ecological economics movement? *Ecological Economics*, 93, 351-362.
Week 15	**Reading Week** April 15-21
Week 16	**Exam Week** April 22-May 6 **Commentary article due April 30 (Sunday) at 11:59 pm**