Fall 2023

STS-363 (101-HM1): Sustainability Studies

Maurie Cohen

Sustainability Studies (STS 363)
Program in Science, Technology, and Society
New Jersey Institute of Technology
Fall 2023

Organizational Details

Instructor: Dr. Maurie Cohen
Time: Tuesdays, 6–8:50pm
Room: Cullimore Lecture Hall #1

Course Website: https://canvas.njit.edu
Prerequisites: HUM 102 with a grade of C or higher and one History and Humanities GER 200-level course with a grade of C or higher.
Course credit: This course satisfies the three-credit 300-level GER in History and Humanities and counts toward meeting the requirements of the Minor in Environmental and Sustainability Studies and the Minor in Science, Technology, and Society
Teaching Assistant: Ayushi Shah (aps94@njit.edu)

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Overview

Over the past three decades, the pursuit of sustainable development has become an increasingly prominent objective for many policymakers concerned with issues at the intersection of society, economy, and environment. The international community has created new institutions to foster sustainability and reoriented the focus of existing organizations. At the local level, there have been numerous initiatives implemented to facilitate more sustainable land-use practices and businesses have taken incremental steps to reduce the adverse impacts of their operations. Despite this progress, sustainable development remains an ill-defined (perhaps even elusive) concept and evidence of unambiguous achievements – especially in the United States – can be difficult to ascertain. Moreover, developed and developing countries have formulated largely different (and potentially incompatible) agendas with which to engage the notion of sustainability. Large countries with emergent economies, most notably China, India, Indonesia, and Brazil, pose especially vexing dilemmas. This course devotes primary attention to the challenges that sustainable development holds for affluent countries (the so-called G-20 (http://www.g20.org) and the members of the Organization for Economic Co-operation and Development (https://www.oecd.org). We examine the intellectual roots of the concept and explore why it has become a central feature of global politics and policy planning in such a relatively short period. Of additional interest is how the sustainability agenda is likely to evolve over the next few decades given the escalating impacts of anthropogenic climate change and increasingly pervasive biophysical constraints on economic growth, as well as the ongoing and multifarious challenges posed by medium- and longer-term recovery from the COVID-19 pandemic.

Course Learning Outcomes

- To understand the political and scientific origins of sustainable development/sustainability.
- To appreciate the role and inseparability of environmental, social, and economic sustainability.
- To recognize the different obstacles and challenges of sustainability in higher-income and lower-income countries.
- To apprehend both the potentials and limitations of technological innovation as a pathway toward a more sustainable future.
- To develop an ability to assess the relationship among economic growth, resource utilization, and biophysical limits.

Required Readings

Cohen, Maurie. 2021. *Short Introductions: Sustainability*. Cambridge: Polity Press (available at the bookstore and through online sources) (ISBN 978-1-5095-4032-7)

All other readings and multimedia presentations will be available via the course website (https://canvas.njit.edu) and organized into weekly folders.

Evaluation

The evaluation of student performance comprises five components: attendance, and participation, weekly quizzes, midterm exam, and final exam

1. ***Attendance (15%):*** Students are expected to attend each class session and a record will be kept (late arrival – more than thirty minutes – without prior notification will be treated as an absence). Each student will be granted two "free absences" during the semester; every subsequent absence will mean a full letter-grade reduction in the attendance portion of your final grade (i.e., three absences is a B, four absences is a C, and so forth).

2. ***Participation (15%):*** Students are encouraged to engage actively in in-class discussions by offering comments, posing questions, and demonstrating familiarity with the course material. You can alternatively (or additionally) participate in the various online conversations that will take place during the semester. Feel free to ask me for a periodic performance appraisal if you would like feedback on your standing with respect to participation.

3. ***Weekly Quizzes (25%):*** We will have (at the start of class) weekly quizzes based on the prior week's session and assigned readings. These assessments will generally comprise five multiple-choice questions and three definitional or short-answer questions. The quizzes will be delivered through Canvas so bring your laptop or a similar portable device to class. *The first quiz will be on Tuesday, September 12.*

4. ***Midterm Exam (20%):*** The midterm is intended to be a "synthesizing experience" and it is anticipated that there will be a combination of multiple-choice questions and two essays to complete. The multiple-choice questions will be similar to the weekly quiz questions. For the latter part, I will provide an article (or a multimedia resource such as a video or podcast) one week in advance that integrates across the various themes covered during the first half of the semester. On the day of the midterm, I will then give you several questions and you will have approximately one hour to write responses to two questions of your own choosing.

5. ***Final Exam (25%):*** The final exam will use the same format described above for the midterm and the scope of the assessment will focus predominantly on the second half of the semester.

Final Grading Rubric
90–100 = A
87–89 = B+
80–86 = B
77–79 = C+
70–76 = C
60–69 = D
< 60 = F
****** *As a general rule, a grading curve is not applied.*

Statement on Academic Integrity
"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at*:* http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf."

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Office of the Dean of Students**.** Any student found in violation of the code by cheating, plagiarizing, or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university**.** In the event of questions about the code of Academic Integrity, please contact the Office of the Dean of Students at dos@njit.edu.

If you are uncertain as to what constitutes plagiarism, please refer to the article entitled "Plagiarism Lines Blur for Students in the Digital Age" available on the course website.

Note on the Use of Generative Artificial Intelligence
In accordance with university policies, the uncited use of generative artificial intelligence in the form of (but not limited to) ChatGPT and Grammarly is regarded as a violation of the above-referenced statement on academic integrity. If a student uses one of these technologies at *any* stage of the writing process without full and complete acknowledgement and attribution it will be treated as plagiarism and reported to the Office of the Dean of Students for further review. Depending on the specific circumstances, the outcome of the adjudication process may involve

failure on the specific assignment or in certain instances failure for the course.

Other Policies

- ***Make-up exams:*** I am decidedly unenthusiastic about allowing make-up exams and will only do so in extraordinary cases and with confirmation of absence by the Office of the Dean of Students.
- ***Incompletes:*** A grade of incomplete is only assigned in the face of extremely extenuating circumstances that are pre-confirmed by the Office of the Dean of Students. Students facing such a situation are also encouraged to bring the matter to my attention at the earliest possible opportunity.

Course Schedule

Week 1 (September 5): Conceptual and Scientific Foundations of Sustainability (*Why Are We Talking About Sustainability?*)

Overbye, Dennis. 2018. Apollo 8's *Earthrise*: the shot seen round the world. *The New York Times*, December 21.

Boulton, Matthew and Joseph Heithaus. 2018. We are all riders on the same planet. *The New York Times*, December 24.

Rockström, Johan. 2009. A safe operating space for humanity. *Nature* 461(24): 472–475.

Steffen, Will. 2015. Planetary boundaries: guiding human development on a changing planet. *Science* 347(6223): 735–746.

Sustainability Science Education. 2020. A history of sustainability (Video: https://www.youtube.com/watch?v=1XoxyMgIGGc).

Week 2 (September 12): History and International Politics of Sustainability *(Where Did the Notion of Sustainability Come From?)*

Cohen, Maurie. 2021. What is sustainability? 1–21 in *Short Introductions: Sustainability*.

Du Pasani, Jocabus. 2006. Sustainable development: historical roots of the concept. *Environmental Sciences* 3(2): 83–96.

Scoones, Ian. 2016. The politics of sustainability and development. *Annual Review of Environment and Resources* 41: 293–319.

Caradona, Jeremy. 2014. Sustainability: a history (Video: https://www.youtube.com/watch?v=hho1h7OR6l8).

Earthrise Studios. 2022. Is sustainability a lie? (https://www.youtube.com/watch?v=IBxghkRL-N0).

Week 3 (September 19): Are We There Yet? Measuring Sustainability *(How Can We Measure Something that Is So Hard to Define?)*

Cohen, Maurie. 2021. The science of sustainability, 22–46 in *Short Introductions: Sustainability*.

Heal, Geoffrey. 2012. Reflections: defining and measuring sustainability. *Review of Environmental Economics and Policy* 6(1): 147–163.

Kumar, P. 2020. Measuring for sustainability. *Nature Sustainability* 3: 576.
Cohen, Steve. 2020. Defining and measuring sustainability. State of the Planet, Columbia Climate School, October 19.
Green, Adam. 2022. Green metrics: Are we measuring sustainability right? *The Economist Podcast* (https://impact.economist.com/sustainability/project/sustainable-technology/green-metrics-are-we-measuring-sustainability-right.html).

Week 4 (September 26): Sustainability and Technoscience I – The Theory and Practice of Ecological Modernization *(Can We Engineer Our Way to a More Sustainable Future?)*

Cohen, Maurie. 2021. Engineering a more sustainable future, 47–67 in *Short Introductions: Sustainability*.
Kolbert, Elizabeth. 2007. Mr. Green: environmentalism's most optimistic guru. *The New Yorker*, January 22.
Nijhuis, Michelle. 2015. Is the *Ecomodernist Manifesto* the future of environmentalism? *The New Yorker*, June 2.
Gelles, David, Brad Plumer, Jim Tankersley, and Jack Ewing. 2023. The energy transition: it's a surprisingly speedy shift. *The New York Times*, August 17.
Pritzker, Rachel. 2017. An eco-modernist manifesto. TED (Video: https://www.youtube.com/watch?v=PcAKs7DVkPw).

Week 5 (October 3): Sustainability and Technoscience II – Industrial Ecology and Earth Systems Engineering *(What Would Happen If We Treated the Challenge of Sustainability as an Engineering Problem?)*

Garner, Andy and Gregory Keoleian. 1995. Industrial ecology: an introduction. National Pollution Prevention Center for Higher Education, University of Michigan.
Specter, Michael. 2012. The climate fixers: Is there a technological solution to global warming? *The New Yorker*, May 14.
Tankersley, Jim, Brad Plumer, Ana Swanson, and Ivan Penn. 2023. The energy transition: it's irking friends and foes. *The New York Times,* August 17.
Chertow, Marian. 2020. The MacMillan Report: Marian Chertow talks about industrial ecology and symbiosis in the development world. Yale School of the Environment (Video: https://www.youtube.com/watch?v=LxCZIZuADGg).

Week 6 (October 10): Sustainability and Technoscience III – Eco-design and the Potential of a Circular Economy *(Is the Notion of a Circular Economy the Answer We Have Been Looking For All this Time?)*

McDonough, William and Michael Braungart. 1998. The next industrial revolution. *The Atlantic*, October.
Stahel, Walter. 2016. Circular economy. *Nature* 531:435-437.
Schwab, Klaus. 2016. The Fourth Industrial Revolution: what it means and how to respond. Geneva: World Economic Forum, January 14.

Ellen MacArthur Foundation. *What is a Circular Economy?* London: EMF (see various resources on this website).

Ewing, Jack, Clifford Krauss, and Lisa Friedman. 2023/ The energy transition: it's a battle for hearts and minds. *The New York Times*, August 17.

Bank Lombard Odier and Company. 2020. The transition to a sustainable economic model (Video: https://www.youtube.com/watch?v=GYIbWRRrJyY&t=18s).

Week 7 (October 17): Sustainability and the Limits of Techoscientific Innovation *(What Happens If the Engineers are Wrong?)*

Zehner, Ozzie. 2014. Unclean at any speed. *IEEE Spectrum*, June 30.

Owen, David. 2010. The efficiency dilemma. *The New Yorker*, December 20.

Saxe, Shoshanna. 2019. I'm an engineer, and I'm not buying into "smart" cities. *The New York Times*, July 16.

Huesemann, Michael. 2015. Why technology can't save us. IFG Teach-in on Techno-Utopianism and the Fate of the Earth (see also the video version of the text at http://www.ratical.org/ratville/AoS/MHuesemann102514.html).

Week 8 (October 24): Midterm Exam

Week 9 (October 31): Gross Domestic Product and its Flaws *(Does Sustainability Really Mean that We Need to Rethink Economic Growth?)*

Clifford Cobb, Ted Halstead, and Jonathan Rowe. 1995. If the GDP is up, why is America down? *The Atlantic*, October.

Gertner, Jon. 2010. The rise and fall of the GDP. *The New York Times Magazine*, May 13.

Lederer, Katy. 2015. The end of GDP? *The New Yorker*, September 9.

Leonhardt, David. 2018. We're measuring the economy all wrong. *The New York Times*, September 14.

Meredith, Sam. 2021. Degrowth: is it time to live better with less? *CNBC*, February 19 (Video: https://www.cnbc.com/2021/02/19/degrowth-pushing-social-wellbeing-and-climate-over-economic-growth.html).

Week 10 (November 7): Is a Steady-State Economy Possible…Inevitable? *(Do We Need to Put the Brakes on Economic Growth?)*

Wolf, Martin. 2012. Is unlimited growth a thing of the past? *Financial Times*, October 2.

Daly, Herman. 2008. A steady-state economy. *The Ecologist*, April 1.

Speth, James Gustave. 2008. Modern capitalism: out of control. In *The Bridge at the Edge of the World: Capitalism, the Environment, and Crossing from Crisis to Sustainability*, 46–66. New Haven, CT: Yale University Press.

O'Neill, Dan. 2021. What is a steady-state economy? How do we achieve it? Ecological Economics (Video: https://www.youtube.com/watch?v=rAXPLfiHP2g0).

Week 11 (November 14): Toward Sustainable Consumption and Lifestyles *(Is Unsustainability My Fault?)*

Assadourian, Erik. 2013. Re-engineering cultures to create a sustainable civilization, 113–125 in *State of the World 2013: Is Sustainability Still Possible*. Washington, DC: Island Press.

Maniates, Michael. 2002. Individualization: plant a tree, buy a bike, save the world? in *Confronting Consumption* edited by Thomas Princen, Michael Maniates, and Ken Conca, 43–66. Cambridge, MA: MIT Press.

Roberts, David. 2019. Cities are beginning to own up to the climate impacts of what they consume. *Vox*, July 1.

Moorthy, Kartik. 2019. SDG 12: Explaining responsible consumption and production. Rotterdam School of Management, Erasmus University (Video: https://www.youtube.com/watch?v=-QSZIAc38lg).

Thanksgiving Break: No Class on November 21 (Thursday Schedule in Effect)

Week 12 (November 28): Prosperity, Economic Growth, and Sustainability *(Does Money Buy Happiness (and Well-Being)?*

Cassidy, John. 2020. Can we have prosperity without growth? *The New Yorker*, February 10.

Jackson, Tim. 2017. The limits to growth. In *Prosperity Without Growth: Foundations for the Economy of Tomorrow*, 1–22. London: Routledge.

Alexander, Samuel. 2014. Life in a "degrowth" economy, and why you might actually enjoy it. *The Conversation*, October 1.

Jackson, Tim. 2017. Tim Jackson on prosperity without growth. *Euractiv*, March 22 (Video: https://www.euractiv.com/section/economy-jobs/video/tim-jackson-on-prosperity-without-growth).

Week 13 (December 5): Forecasting the Future and Designing Pathways for Sustainability Transitions

Raskin, Paul, Tariq Banuri, Gilberto Gallopín, Pablo Gutman, Al Hammond, Robert Kates, and Rob Swart. 2002. *Great Transition: The Promise and Lure of the Times Ahead*. Boston: Stockholm Environmental Institute and Tellus Institute.

Raskin, Paul. 2010. Visions of a sustainable world. Yale School of the Environment (https://greattransition.org/explore/videos).

Week 14 (December 12): Sustainability in the Post-COVID World *(Has the Pandemic Been Good or Bad for Sustainability and the Planet?)*

Cohen, Maurie. 2020. Does the COVID-19 outbreak mark the onset of a sustainable consumption transition? *Sustainability: Science, Practice, and Policy* 16: 1–3.

Cohen, Maurie. 2021. Afterward: sustainability in the Era of COVID-19, 144–149 in *Short Introductions: Sustainability*.

Lehman, Paul et al. 2021. Making the COVID-19 crisis a real opportunity for environmental sustainability. *Sustainability Science* 16: 2137–2145.

Brookings Institution. 2020. Great Transitions: doubling down on the Sustainable Development Goals (video: https://www.brookings.edu/articles/great-transitions-doubling-down-on-the-sustainable-development-goals).

Down to Earth. 2022. What is the progress in Sustainable Development Goals (SDGs) post Covid-19? (https://www.youtube.com/watch?v=vhni5PVlaIg).

Week 15 (TBD): Final Exam