

ESP802: Human Systems and the Environment

Time: Tuesdays 9:10-12:00

Location: Berkey 115

Office hours for class coordinator, E. Moran: Mondays 2-4 pm

Location: 207 Manly Miles Bldg

Make appointments by emailing: moranef@msu.edu

Course description¹: Anthropological, economic, geographical, legal, political, and sociological concepts of human systems in the context of environmental change

Course overview: ESP802 has been redesigned to provide students with disciplinary training in natural sciences and engineering with a broad view of how social sciences address the challenges of environmental change. ESP802 is co-taught by five MSU instructors. The course will include the following components:

- 1) Four modules providing disciplinary perspectives from different areas of the social sciences: Module 1: Sociology (Prof. Jennifer Carrera); Module 2: Economics (Prof. Joseph Herriges); Module 3: Anthropology (Prof. Lucero Radonic); Module 4 (Prof. Amber Pearson).
- 2) Focus on a case study that will provide a crosscutting interdisciplinary experience: it could be something like The Social Dimensions of a Water Crisis: Flint and other communities or other topics proposed by students and approved by the instructors. The case study of Flint is a salient one in current events with public policy relevance and will serve as common points of reference for learning in ESP 801, a counterpart course that is structured in a modular fashion but focuses on natural sciences and engineering approaches.
- 3) At the end of each module, each student will be required to develop one essay (3 to 5 pages) that reflect on the relevance of the specific discipline covered in the module for one of the case studies.
- 4) The final project is designed as a capstone experience that integrates learning in the four modules. The final product will build on the essays developed by students in the four modules of the class. The report will be published as a part of ESPPulse – a semiannual publication by ESPP.

ESP801 and ESP802 build a foundation for an integrative experience in the ESP804 course where students, having taken ESP801 or ESP 802, work on team-based projects that span the social/natural science spectrum. The new curriculum design reflects ESPP's objective of

¹<https://reg.msu.edu/Courses/Request.aspx?SubjectCode=ESP&CourseNumber=801&Source=SB&Term=1164#Results>

providing an interdisciplinary preparation to a cohort of students from diverse background pursuing an interest in environmental science and policy.

Recommended background

Bachelor's or Master's in appropriate discipline for specialization.

Course learning objectives

At the end of this course, students will be able to:

1. Describe scopes and main methods of key social science disciplines focused on the environment.
2. Critically evaluate – in essay form - how each such discipline impinges on a specific environmental case of public policy relevance.
3. Synthesize the results of the team inquiry in the form of a professionally-prepared written report for public distribution by ESPP

Instructors

Emilio Moran	Department of Geography, Environmental Science and Policy program. John A. Hannah Distinguished Professor <i>Dr. Moran's research has been on land use change, human-environment interactions, agroecology. He currently leads an INFEWS project "Rethinking Dams" that will develop innovative approaches to hydropower.</i>	moranef@msu.edu
Jennifer Carrera	Department of Sociology, ESPP <i>Dr. Carrera's research focuses on the causes and consequences of impaired access to water and sanitation among low-income populations</i>	jcarrera@msu.edu
Joseph Herriges	Department of Economics, ESPP <i>Dr. Herrige's research in environmental economics provides a perspective on the economics of water management and water infrastructure, and ways in which economics provides insights on human decisions towards environment</i>	jah@msu.edu
Lucero Radonic	Department of Anthropology, ESPP <i>Dr. Radonic's work provides insights from an anthropological perspective on how cultural dimensions impact use of the environment, how</i>	radonicl@msu.edu

	<i>communities self-organize, and engage in social mobilization</i>	
Amber Pearson	Department of Geography, Environment & Spatial Sciences, ESPP <i>Dr. Pearson's research utilizes spatial and epidemiological techniques to understand health inequalities at multiple scales</i>	apearson@msu.edu

Grading scheme

Module 1: 15% = 10% essay + 5% participation

Module 2: 15% = 10% essay + 5% participation

Module 3: 15% = 10% essay + 5% participation

Module 4: 15% = 10% essay + 5% participation

Final Research project: 40%

Essays are due on the Friday after the third class in each module, it should be 3-5 pages in length, and in it each student will discuss how that discipline's approaches could be used to address research questions of interest to the student but of relevance to environmental science and policy

A final paper will be due on the day the final exam is scheduled. This will be a research paper, it need not be on the Flint water crisis but it could be. It will follow the format of a research article or a research proposal and will be abundantly referenced, and problem oriented. The final papers will be read and graded by the course coordinator.

Policy on Plagiarism:

Plagiarism, or the copying of materials without proper attribution, is unacceptable behavior in the University. Any plagiarized assignment will receive a zero.

Detailed syllabus

Readings

Please refer to the D2L course site for required readings for each module.

Module 1: Sociology Dr. Jennifer Carrera email: jcarrera@msu.edu

Week One: Undone Science and Critical Perspectives on “Objectivity” (Jan. 10)

- Frickel, S., Gibbon, S., Howard, J., Ottinger, G. and Hess, D., 2009. Undone science: charting social movement and civil society challenges to research agenda setting. *Science, Technology & Human Values*, 35(4): 444-473.
- Hess, D.J., 2009. The potentials and limitations of civil society research: Getting undone science done. *Sociological Inquiry*, 79(3): 306-327.
- Kempner, J., Merz, J.F. and Bosk, C.L., 2011, September. Forbidden Knowledge: Public Controversy and the Production of Nonknowledge. *Sociological forum*, 26(3): 475-500.
- Kleinman, D.L. and Suryanarayanan, S., 2013. Dying bees and the social production of ignorance. *Science, technology & human values*, 38(4), 492-517.
- McGoey, L., 2012. The logic of strategic ignorance. *The British journal of sociology*, 63(3): 533-576.

Week 2: Citizen Science and Public Participation in Science (Jan. 17)

- Arnstein, Sherry R. "A Ladder of Citizen Participation," *Journal of the American Institute of Planners*, Vol. 35(4): 216-224.
- Kinchy, A., Jalbert, K. and Lyons, J., 2014. What is volunteer water monitoring good for? Fracking and the plural logics of participatory science. *Political Power and Social Theory*, 27(2): 259-289.
- Kinchy, A., 2016. Citizen Science and Democracy: Participatory Water Monitoring in the Marcellus Shale Fracking Boom. *Science as Culture*, 1-23.
- Moore, K., Kleinman, D.L., Hess, D. and Frickel, S., 2011. Science and neoliberal globalization: a political sociological approach. *Theory and Society*, 40(5), 505-532.
- Ottinger, G. and Sarantschin, E., 2016. Exposing infrastructure: how activists and experts connect ambient air monitoring and environmental health. *Environmental Sociology*, 1-11.

Week 3: Flint and Detroit Water Crises (Jan. 24)

- Kirkpatrick, L.O., 2015. Urban Triage, City Systems, and the Remnants of Community Some “Sticky” Complications in the Greening of Detroit. *Journal of Urban History*, 41(2), 261-278.
- Pierce, G.S. and Gonzalez, S., 2016. Mistrust at the Tap? Factors contributing to public drinking water (Mis) perception across US households. *Water Policy*, p.wp2016143.

- Sadler, R.C. and Highsmith, A.R., 2016. Rethinking Tiebout: The Contribution of Political Fragmentation and Racial/Economic Segregation to the Flint Water Crisis. *Environmental Justice*, 9(5): 143-151.
- Soleri, D., Long, J., Ramirez-Andreotta, M., Eitemiller, R. and Pandya, R., 2016. Finding Pathways to More Equitable and Meaningful Public-Scientist Partnerships. *Citizen Science: Theory and Practice.*, 1(1).
- We the People of Detroit Community Research Collective. 2016. Mapping the Water Crisis. Available here: <https://wethepeopleofdetroit.com/communityresearch/>
- Module 1 Paper due Jan. 27 to Prof. Carrera by 5 pm.**

Module 2: Economics Dr. Joseph Herriges email: jah@msu.edu

Fullerton, Don and R. N. Stavins, 1998, "How Economists see the environment," *Nature*, 395, 433-434

Week 4: Policy Tools (Jan. 31)

Goulder, L.H. and I. W.H. Parry, 2008. "Instrument choice in environmental policy," *Review of Environmental Economics and Policy*, 2, 152-174.

Graham, John D., 2007. "The evolving regulatory role of the US Office of Management and Budget," *Review of Environmental Economics and Policy*, 1, 171-191.

Harrington, W. and R.D. Morgenstern, 2004. "Economic incentives versus command and control," *Resources*,² 152.

Koehane, N.O., R.L. Revesz and R.N. Stavins, 1998. "The choice of regulatory instruments in environmental policy," *Harvard Environmental Law Review*, 22, 313-367.

Portney, Paul R., 2003. "Market-based approaches to environmental policy: a refresher course," *Resources*, 151.

Tietenberg, T., 1985. "Regulatory reform in air pollution control," *Resources*, 79.

Week 5: Benefit Cost Analysis (Feb. 7)

Arrow, K., et al., 1996, "Is there a role for benefit-cost analysis in environmental, health, and safety regulation?" *Science*.

Carson, Richard. 2012 "Contingent Valuation: A Practical Alternative When Prices Aren't Available" *Journal of Economic Perspectives* 26(4): 27-42.

² *Resources* is an RFF publication, accessible from MSU's library website (e-resources)

Kling, Catherine L., Daniel J. Phaneuf, and Jinhua Zhao. 2012. "From Exxon to BP: Has Some Number Become Better than No Number?" *Journal of Economic Perspectives* 26(4): 3–26.

Hausman, Jerry A. 2012. "Contingent Valuation: From Dubious to Hopeless." *Journal of Economic Perspectives* 26(4): 43–56.

Week 6: Applications (Feb. 14)

a. Water

Olmstead, Sheila. 2009. "The Economics of Water Quality." *Review of Environmental Economics and Policy*. 4(1): 44-62.

Olmstead, Sheila. 2010. "The Economics of Managing Scarce Water Resources." *Review of Environmental Economics and Policy*. 4(2): 179-198.

b. Transportation

Anderson, Soren, Ian Parry, James Sallee, and Carolyn Fischer. 2011. "Automobile Fuel Economy Standards: Impacts, Efficiency, and Alternatives." 5(1): 89-108.

Gillingham, K., D. Rapson, and G. Wagner. 2015. "The Rebound Effect and Energy Efficiency Policy." *Review of Environmental Economics and Policy*. 10(1): 68-88.

Jacobsen, M. R. 2013. "Fuel Economy and Safety: The Influences of Vehicle Class and Driver Behavior." *American Economic Journal: Applied Economics*. 5(3): 1-26.

Module 2 Paper due to Prof. Herriges Friday Feb. 17 by 5 pm.

Module 3. Anthropology: Dr. Lucero Radonic email: radonicl@msu.edu

Week 7: The political ecology of water governance (Feb. 21)

Swyngedouw, Eric et al. (2002) Urban water: A political ecology perspective. *Built Environment*, 28(2): 124-137.

Loftus, Alex (2009) Rethinking political ecologies of water. *Third World Quarterly*, 30(5): 953–968.

- Bakker, Karen (2010) Commons versus commodities: Political ecologies of water privatization. In Peet, R., Robbins, P., and Watts, M. (Eds.) *Global Political Ecology* London: Routledge, 345–368.
- Schmidt, Jeremy J. (2014) Historicising the hydrosocial cycle. *Water Alternatives*, 7(1): 220-234.
- Shnegg, Michael (2016) Lost in translation: State policies and micro-politics of water governance in Namibia. *Human Ecology*, 44: 245–255.
- Fabricant, Nicole and Kathryn Hicks (2013) Bolivia's Next Water War: Historicizing the struggles over access to water resources in the twenty-first century. *Radical History Review*, 116: 130-144.

Recommended additional readings:

Barnes, J., 2014. *Cultivating the Nile: the everyday politics of water in Egypt*. Duke University Press.

Albro, Robert. Water is ours carajo! Deep citizenship in Bolivia's water war. In *Social Movements: An Anthropological Reader*. Oxford and Malden: Blackwell Publishing, 249-271.

Week 8: Infrastructure: an anthropological perspective (Feb. 28)

- Larkin, Brian (2013) The politics and poetics of infrastructure. *Annual Review of Anthropology*, 42: 327-343.
- von Schnitzler, Antina (2008) Citizenship prepaid: Water, calculability and techno-politics in South Africa. *Journal of Southern African Studies*, 34(4): 899-917.
- Chalfin, Brenda (2014) Public things, excremental politics, and the infrastructure of bare life in Ghana's city of Tema. *American Ethnologist*, 41(1): 92-109.
- Rodgers, Dennis (2012) Haussmannization in the tropics: Abject urbanism and infrastructural violence in Nicaragua. *Ethnography*, 13(4): 413-438.
- Anand, Nikhil (2012) Municipal disconnect: On abject water and its urban infrastructures. *Ethnography*, 13(4): 487-509.
- Ferguson, James (2012) Structures of responsibility. *Ethnography*, 13(4): 558-562.

Recommended additional readings:

Morales, Margaret (2016) My pipes say I am powerful: belonging and class as constructed through our sewers. *Wiley Interdisciplinary Reviews: Water*, 3(1): 63–73.

Anand, Nikhil (2011) Pressure: The politechnics of water supply in Mumbai. *Cultural Anthropology*, 26(4): 542–564.

Week 9: spring break (March 6-10)

Week 10: The right to water: Applications and debates (March 14)

von Schnitzler, Antina (2014) Performing dignity: Human rights, citizenship and the technopolitics of law in South Africa. *American Ethnologist*, 41(2): 336–350.

Sultana, Farhana and Alex Loftus (2015) The human right to water: Critiques and condition of possibility. *Wiley Interdisciplinary Reviews: Water*, 2(2): 97-105.

Perera, Verónica (2011) From Cochabamba to Colombia, travelling repertoires in Latin American water struggles. Farhana Sultana and Alex Loftus. In *The right to water: governance, politics, and social struggles*. London: Earthscan. Pp. 241-256.

Rodina, Lucy and Leyla M. Harris (2016) Water services, lived citizenship, and notions of the state in marginalised urban spaces: The case of Khayelitsha, South Africa. *Water Alternatives*, 9(2): 336-355.

Morinville, Cynthia and Lucy Rodina (2013) Rethinking the human right to water: Water access and dispossession in Botswana's Central Kalahari Game Reserve. *Geoforum*, 49:150-159.

Mehta, Lyla et al. (2014) Global environmental justice and the right to water: The case of peri-urban Cochabamba and Delhi. *Geoforum*, 54: 158–166.

Recommended additional readings:

Goldman, Michael (2007) "How 'Water for All' Became Hegemonic: The Power of the World Bank and its Transnational Policy Networks," *Geoforum* 38: 786-800.

Module 3 Paper due to Prof. Radonic Friday March 17 by 5 pm.

Module 4: Geography: Dr. Amber L. Pearson email: apearson@msu.edu

Week 11: Health and Medical Geography (March 21)

- Smyth, F., *Medical geography: understanding health inequalities*. Progress in Human Geography, 2007. **32**(1): p. 119-127.
- Brown, T. and G. Moon, *From Siam to New York: Jacques May and the Foundation of Medical Geography*. Journal of Historical Geography, 2004. **30**(4): p. 747-763.
- Hayes, M., *'Man, disease and environmental associations': from medical geography to health inequalities*. Progress in Human Geography, 1999. **23**(2): p. 289-296.
- Kearns, R. and G. Moon, *From Medical to Health Geography: Novelty, Place and Theory After a Decade of Change*. Progress in Human Geography, 2002. **26**: p. 605-625.
- Mayer, J.D., *The political ecology of disease as one new focus for medical geography*. Progress in Human Geography 1996. **20**(4): p. 441-456.

Week 12: Water insecurity: Multiple ways of knowing (March 28)

- Bisung, E. and S. Elliott, *Toward a social capital based framework for understanding the water-health nexus*. Soc Sci Med, 2014. **108**: p. 194-200.
- Bradley, D.J. and J.K. Bartram, *Domestic water and sanitation as water security: monitoring, concepts and strategy*. Philos Trans A Math Phys Eng Sci, 2013. **371**(2002): p. 20120420.
- Gober, P., et al., *Urban adaptation to mega-drought: Anticipatory water modeling, policy, and planning for the urban Southwest*. Sustainable Cities and Society, 2016.
- Stevenson, E.G., et al., *Water insecurity in 3 dimensions: an anthropological perspective on water and women's psychosocial distress in Ethiopia*. Soc Sci Med, 2012. **75**(2): p. 392-400.
- Yang, H., et al., *Water safety and inequality in access to drinking-water between rich and poor households*. Environ Sci Technol, 2013. **47**(3): p. 1222-30.
- Wutich, A. and K. Ragsdale, *Water insecurity and emotional distress: coping with supply, access, and seasonal variability of water in a Bolivian squatter settlement*. Soc Sci Med, 2008. **67**(12): p. 2116-25.
- Budds, J., *Power, nature and neoliberalism: The political ecology of water in Chile*. Singapore J Tropical Geography, 2004. **25**(3): p. 322-342.

Week 13: Methods for understanding water insecurity, case studies (April 4)

- Jepson, W. (2014) "Measuring a 'no-win' waterscape: Experience-based scales and classification approaches to measure household water security in colonias on the US-Mexico Border" *Geoforum* (51): 107-120

- Pearson, A.L., *Comparison of methods to estimate water access: a pilot study of a GPS-based approach in low resource settings*. International Journal of Health Geographics, 2016. **15**(1).
- Krumdieck, N., et al., *Household water insecurity is associated with a range of negative consequences among pregnant Kenyan women of mixed HIV status*. Journal of Water and Health, 2016.
- Eichelberger, L.P., *Living in utility scarcity: energy and water insecurity in Northwest Alaska*. Am J Public Health, 2010. **100**(6): p. 1010-8.
- Pauw, J., *The politics of underdevelopment: metered to death-how a water experiment caused riots and a cholera epidemic*. International Journal of Health Services, 2003. **33**(4): p. 819-830.
- Bisung, E., et al., *Social capital, collective action and access to water in rural Kenya*. Soc Sci Med, 2014. **119C**: p. 147-154.
- Hanna-Attisha, M., et al., *Elevated Blood Lead Levels in Children Associated With the Flint Drinking Water Crisis: A Spatial Analysis of Risk and Public Health Response*. Am J Public Health, 2016. **106**(2): p. 283-90.

Week 14 (April 11) & Week 15 (April 18) Student Presentations

Final paper due on first day of Final Exams Week: Friday, April 28

HAVE A GREAT SUMMER!!!!