Sustainability Learning Outcomes (SLO) Course & Curriculum Proposal Form
(please return to Deane.Wang@uvm.edu or lhill@uvm.edu)

Background and introduction to the SLO requirement

Four sustainability learning outcomes were approved by the UVM Faculty Senate in April of 2014. At that time a preamble providing the rationale for this requirement was part of the approved resolution. It is repeated here.

As stated in Our Common Ground, "The University of Vermont is an educationally purposeful community seeking to prepare students to live in a diverse and changing world." In the context of the emerging challenges of the 21st Century, this preparation includes envisioning and planning for a sustainable society. In addition, Our Common Ground speaks to "the transforming power of education." Thus UVM's vision for sustainability embraces the goal of educating all of its students to understand and contribute to the sustainability of human society. That is, we recognize that the pursuit of ecological, social, and economic vitality must come with the understanding that the needs of the present be met without compromising the ability of future generations to meet their own needs. Through its General Education Initiative, The University of Vermont will integrate its sustainability vision across curricular and co-curricular activities. Whatever their chosen discipline, each student will demonstrate their understanding of the defined learning outcomes in the knowledge, skills and values categories, as well as the personal domain.

Students who are prepared to address the challenges of creating a sustainable world have knowledge of current issues in sustainability and the social, ecological, and economic dimensions of these complex problems. With the knowledge gained through coursework from varied disciplines, students develop the skills to engage in rigorous and complex discussions around creating sustainable solutions. Coursework and experiences in sustainability are meant to widen social, historical, and cultural perspectives and strengthen students' ability to negotiate multiple values that routinely come into play when planning for sustainability at the local, regional or global scales. Students connect conceptual learning to challenges and opportunities in the world outside of the university classroom by critically analyzing their own experiences in order to make sustainability meaningful and guide their personal actions.

Please provide three components as part of your proposal submission:

1. Background/explanation: a brief history of the course/curriculum, general reasons why the course satisfies the Sustainability Learning Outcomes (SLO), and any other contextual information that can assist the committee in its review process.
2. Completed SLO table (see below).
3. Most current version of your course syllabus (syllabi in the case of a curriculum)

The SLO table will allow you to describe how your course/curriculum meets each of these outcomes. For each SLO, please indicate the level of exposure that you plan to incorporate in your teaching. The level of exposure to the learning outcome can be variable. The Committee seeks some level of exposure to all four (4) sustainability learning outcomes (SLOs). It is also expected that for three (3) of the outcomes, the level of exposure will at least be to "reinforces." A brief description of these expectations follows:

- **Introduces** indicates that the course objective is to familiarize students with the learning outcome so they can define terms. For example, the student has been exposed to some applications of the topic/concept through a lecture and/or reading. Other educational

frameworks used to organize learning levels may use language like "fundamental" and "factual," imparting the ability to remember and understand.

- **Reinforces** indicates that the course objective will follow up the introduction of topic(s) with student work to apply the topic/concept themselves, either in a personal domain or that of organizations, institutions, municipalities, etc. This might include critical reflections, case studies, or laboratory exercises. The readings and related assignments should be substantive. Other educational frameworks may use language like "intermediate" and "conceptual," imparting the ability to apply and analyze.
- **Mastery** level is NOT an expectation for sustainability learning outcomes associated with a single first course addressing sustainability. However, if you feel that the course work provided in your course attains this level, we would like to value that learning outcome. This level might entail educational concepts like "advanced" and "procedural." Students would be able to evaluate and create in the context of these learning outcomes.

Activity title/type, lecture or activity, content, topics taught, etc.

Here we would like to know what type of activity is relevant to achieving the sustainability learning outcome. Is it lecture, an assignment, a service-learning projects, journal assignment, class exercise like a debate, etc.? If you title this activity, please include that here as well (e.g. "sustainability blog"). If there are associated topics, please also include these (e.g. "renewable energy, environmental justice, homeostasis"). If multiple teaching approaches are employed, please them.

Description of the activity and how it addresses the UVM SLO

Please explain your approach to achieving the sustainability learning outcome. This might start with a more detailed description of the activity followed by a discussion of how the learning outcome results from this learning activity. In some cases it will be self-evident, so the description of the activity will suffice. This section provides the most useful material for the committee to evaluate your sustainability learning outcome, so adequate detail will be helpful. The committee's goal is to encourage the development and expansion of sustainability-related curricula, but we need enough detail to carry out our responsibility. We encourage and invite faculty to communicate with the co-chairs of the committee if you need assistance with this process or have questions.

If any assessment methods will be used to demonstrate student learning, please include a brief description. We may request your specific assessment as it could help other faculty to develop similar methods for their course. The committee would also like to encourage faculty professional development around implementation of these sustainability outcomes, and sharing of faculty tools and approaches is an important part of the process.

Title of Course: Geog 145: Geography of Water (also offered under College of Arts & Sciences as first-year TAP seminar using Geog 095)

Submitted by: Beverley Wemple

Contact info: bwemple@uvm.edu, 656-2074

Background/explanation:

I am submitting for your review materials for my Water Resources course offered at UVM. This course is typically offered as *Geog 145: Geography of Water* and serves as an elective course for Geography majors and minors and Environmental Science majors in the water resources concentration. The course is administered through the Department of Geography. You will see more details on the scope and objectives of the course on the syllabus. Although the course has, since its inception, considered sustainability as an important concern in water resources management, I revised the course objectives, readings and activities during my participation in the 2009-10 Sustainability Faculty Fellows program to make the treatment of sustainability more explicit and a key learning objective of the course.

From time to time, I teach a version of the course as a TAP seminar for first-year students in Arts & Sciences (CAS). In these offerings, there is less emphasis on field trips and some differences in content (for example, the week on gender and water is not covered), in order to make more time for writing-intensive activities, since TAP seminars are a writing-intensive experience for CAS students. Nevertheless, both the 100-level course offering and the TAP seminar version of the course treat sustainability explicitly, and the course approval template includes content and activities that are undertaken in both offerings. I therefore seek approval for both offerings of the course for sustainability designation. The submitted SLO matrix explains how the course content addresses the sustainability learning outcomes as developed by the Faculty Senate ad hoc committee in AY2013-14.

SLO #1: Students can have an informed conversation about the multiple dimensions and complexity of sustainability. (knowledge category)
Level of exposure: __reinforces___

Activity title/type, lecture or activity content, topics taugh etc.	**Description of the activity and how it addresses the UVM SLO and any assessment methods used to demonstrate learning (if applicable).**
Introductory lecture "Sustainability in Water Resources Management: Context, Definition and Challenges"	This introductory lecture begins by tracing international environmental meetings sponsored by the United Nations to address key global environmental concerns. The lecture introduces the origin of the term "sustainability" as used in the Brundtland report and within the context of international economic and infrastructure development. The lecture exposes students to elements of "sustainability" as typically defined, highlighting biophysical, economic and social justice dimensions.

Assigned readings	Students read over two weeks a collection of papers that explore how humans have affected the global water cycle. Readings are: Vorosmarty, C. and D. Sahagian, 2000. Anthropogenic disturbance of the terrestrial water cycle. Bioscience, 50(9): 753-765. Raskin, P.D., E. Hansen, and R. M. Margolis. 1996. Water and Sustainability: Global patterns and long-range problems. Natural Resources Forum, 20(1): 1-15. Jackson, R.B., S.R. Carpenter, C.N. Dahm, D.M. McKnight, R.J. Naiman, S.L. Postel and S. W. Running. 2001. Water in a Changing World. Ecological Applications, 11(4): 1027-1045.
Assigned readings	Students conclude course with reading assignment that looks at future alternative policies and technologies to support sustainable water use: Gleick, P. H. 1998c. "Water in Crisis: Paths to Sustainable Water Use." Ecological Applications, 8(3): 571-579.
Written assessments	Students submit three essay-based written "assessments" over the semester in response to prompts, requiring that they integrate their learning from lectures, readings, class discussions and other course content. The first and third of these include prompts regarding readings and course content on sustainability. Students are assessed on their ability to define sustainability within the context of water resources management, enumerate metrics for assessing sustainable water management practices, and identify key economic, legal and/or policy barriers to sustainable water management practices.

SLO #2: Students can evaluate sustainability using an evidence-based disciplinary approach and integrate economic, ecological, and social perspectives. (skills category)
Level of exposure: ___reinforces___

Activity title/type, lecture or activity content, topics taug etc.	**Description of the activity and how it addresses the UVM SLO and any assessment methods used to demonstrate learning (if applicable).**
Field trips	Students engage in two field trips, focusing on how water is managed by professionals at these sites and learning about employment opportunities in water management. Through this experience, students are exposed to the types of skills professionals employ in their fields –

	Champlain Water District, a public drinking water supplier for Chittenden County. Sustainability themes include source water protection, compliance with federal safe drinking water standards, and access/security issues. Essex 19 and Winooski One Hydropower sites, local dam structures run by Green Mountain Power and Winooski One Partnership. Sustainability themes include "green energy" provision using hydropower, ecological effects of dams and fish passage interventions, FERC relicensing of non-federal dams and environmental remediation measures achieved through this process.
Water Footprint Exercise	Students complete an online water footprint exercise developed by National Geographic to look at four sectors of water use (personal, food, energy, other) to compute an average daily water use. http://environment.nationalgeographic.com/environment/freshwater/change-the-course/water-footprint-calculator/ In follow-up in-class exercise, students work in groups on unit conversions to convert water use in gallons per day to cubic meters per year. This exercise then feeds into discussion of Raskin et al article (see SLO #1 above) and values discussion (see SLO #3 below)

SLO #3: Students think critically about sustainability across a diversity of cultural values and across multiple scales of relevance from local to global. (values category)
Level of exposure: ___reinforces__

Activity title/type, lecture or activity content, topics taugh etc.	**Description of the activity and how it addresses the UVM SLO and any assessment methods used to demonstrate learning (if applicable).**
Written reflection and class discussion	During final week of the semester, students are assigned Gleick reading (see SLO #1 above). This paper addresses sustainable solutions to freshwater challenges that range from local (installation of water conservation appliances) to global (key reforms to structural adjustment development policies). Students write a reflective essay following this reading that summarizes their understanding of sustainability, their understanding of 20th century water management schemes, and their thoughts on Gleick's proposals for alternative future paths to water management. Final class session focuses on a discussion of this reading and writing assignment.

SLO #4: Students, as members of society, can recognize and assess how sustainability impacts their lives and how their actions impact sustainability. (personal domain)
Level of exposure: __introduces____

Activity title/type, lecture or activity content, topics taugh etc.	Description of the activity and how it addresses the UVM SLO and any assessment methods used to demonstrate learning (if applicable).
Class discussion	As part of class discussion of Raskin et al discussion described above (see SLO 1), students consider and discuss how their current lifestyle, diet and daily practices vis-a-vis their water footprint would change or be affected by life in various geographic settings

GEOG 145
THE GEOGRAPHY OF WATER
Last taught Fall 2009, revised with Sustainability Content as part of Sustainability Faculty Fellows program

Instructor: Dr. Beverley Wemple
Contact Info: email bwemple@uvm.edu, phone 656-2074, office Old Mill 208

COURSE DESCRIPTION:

This course examines the spatial dimensions of water distribution and its management. Focusing on global freshwater supplies, we examine the physical factors leading to uneven distributions of water in space and time and evaluate the impacts of land use practices on water quantity and quality. We then examine key themes in the management of water resources from regional to global scales. We conclude with an evaluation of the uncertainties surrounding future water resources management. Upon completion of this course, students will be able to

- Trace the historical development of water resources management, from early "civilized" cultures through the end of the 20th century
- Explain how climatological and physiographic factors control the spatial distribution of water at global to regional scales and how landforms, land cover and soil properties control the flow paths and partitioning of freshwater resources at the earth's surface
- Describe categories of water quality contaminants and their effects on human and ecosystem health
- Use data, maps and primary source materials to document changes in water resource availability and/or quality in a selected geographic setting
- Trace the development of the concept of sustainable water resources management and define at least one quantitative measure by which sustainability could be assessed for surface or groundwater supplies.

READINGS:

Course readings are drawn from current literature on water resource science and management. Papers will be posted on the course Blackboard site and should be read *prior* to Monday's class each week in order to be prepared for class discussions. Students are strongly encouraged to print and retain hard copies of the course readings, in order to highlight important concepts within the text and to have copies available for referencing in the assigned on-line reflections and final exam.

GRADING:

Grades for the course will be based on the following:

On-line reflections (25%): Roughly four times during the semester, a reflection assignment will be posted on blackboard. These will take the form of written responses to readings and class lectures and are designed to reinforce course concepts and provide a study aid for the final exam by encouraging you to reflect on important concepts covered in the course.

Field trip report (10%): Four field trips will be offered during the semester, focusing on various themes covered in the course. Each student must participate in one field trip and hand in a written report. Details regarding the field trip options are described below.

Class participation (10%): Roughly once every two weeks, class sessions will be used to discuss course material and reflect on readings. Participation in these sessions, along with regular class attendance, will be used to assess class participation.

Project (25%): The term project is intended to give students an opportunity to explore a water resources issue of interest. Two options for the term project are available: (1) oral class presentation of a current water resources management issue accompanied by an annotated bibliography, and (2) review and critique of a selected text on water issues documented through a written paper. Details regarding the term project options are provided below.

Exam (30%): The exam will cover material for the entire semester and will be given during the final exam period.

Letter grades in the course will be assigned to the overall course percentage score as follows:

97–100: A+	87 – 89: B+	77-79: C+	67-69: D+
93-96: A	83-86: B	73-76: C	63-66: D
90-92: A-	80-82: B-	70-72: C-	60-62: D-
			< 60: F

CLASS ATTENDANCE and ASSIGNMENT DUE DATES

Students are expected to attend class regularly and participate in class discussions. As exams will not take place during class sessions, there is no need to notify the instructor of absences. Class discussion activities that count toward the course participation score cannot be made up if a student is absent. If you are a member of a varsity sports team or other UVM-sponsored group with scheduled activities that will prevent class attendance, please give a copy of this schedule to the instructor before the end of the add/drop period on [DATE]. All assignment due dates will be strictly adhered to, with penalties for late submission of assignments.

ACADEMIC INTEGRITY

Statement by the University of Vermont
The principal objective of The University of Vermont policy on academic honesty is to promote an intellectual climate in which the procedures and sanctions that follow will be superfluous. Academic dishonesty or an offense against academic honesty includes acts which may subvert or

compromise the integrity of the educational process at The University of Vermont. Such acts are *serious offenses,* which insult the integrity of the entire academic community of the University.

Offenses Against Academic Honesty
Offenses against academic honesty are any acts which would have the effect of unfairly promoting or enhancing one's academic standing within the entire community of learners which includes, but is not limited to, the faculty and students of The University of Vermont. The following is a list of some, but not all, offenses of academic dishonesty: plagiarism (submitting someone else's work as your own, including directly lifting text from published reading materials), cheating, copying another's work, and fabricating information or citations. In particular, students should complete the online reflections independently, without consulting with classmates. Suspected dishonesty will be handled by the Center for Student Ethics and Standards.

COURSE OUTLINE:

Part I – Introduction: the geography of water

Week 1	Course introduction. Global water use and the history of water resources management Vorosmarty, C. and D. Sahagian, 2000. Anthropogenic disturbance of the terrestrial water cycle. *Bioscience*, 50(9): 753-765.
Week 2	Sustainability in water resources management: context, definitions and challenges Raskin, P.D., E. Hansen, and R. M. Margolis. 1996. Water and Sustainability: Global patterns and long-range problems. Natural Resources Forum, 20(1): 1-15. Jackson, R.B., S.R. Carpenter, C.N. Dahm, D.M. McKnight, R.J. Naiman, S.L. Postel and S. W. Running. 2001. Water in a Changing World. *Ecological Applications*, 11(4): 1027-1045.

Part II: Water as a resource: water quantity, water quality, implications for human & ecosystem health

Week 3	The water cycle: precipitation patterns, runoff processes, groundwater aquifers and effects of changing climate and landuse Dombeck, M., 2003. From the Forest to the Faucet, in B. McDonald and D. Jehl (eds), *Whose Water Is It?*, National Geographic Society, pp. 125-138. Booth, D. B., 1991. Urbanization and the natural drainage system – impacts, solutions, and prognoses. *Northwest Environmental Journal*, 7(1): 93-118.
Week 4	Water quality and water treatment systems Excerpts from Taylor, L.P., 1992. *The Drummer was the First to Die*. St. Martin's Press.
Week 5	Water and human health Gleick, P. H. 2002 "Dirty Water: Estimated Deaths from Water-Related Diseases 2000–2020." Pacific Institute: Oakland, CA. Montgomery, M.A. and M. Elimelech. 2007. Water and sanitation in developing countries: including heath in the equation. *Environmental Science and Technology*, 41:17-24.
Week 6	Water quality legislation Environmental Protection Agency, 2003. Water on Tap: what you need to know. EPA 816-K-03-007, 32 pp. *read pages 1-22, skim Appendix A.* Excerpts from Ryan, M.A., 2004. *The Clean Water Act Handbook.* American Bar Association.

Week 7	Water and ecosystem health
	Allan, J. D., Flecker, A. S. 1993. "Biodiversity Conservation in Running Waters." *Bioscience*, 43(1): 32-43.

Part III: Water regulation and management

Week 8	History, politics and impacts of river regulation
	Gleick, P. H. 1998. The Status of Large Dams: The End of an Era? in *The World's Water: The Biennial Report on Freshwater Resources*. Washington, D.C. Island Press, pp. 69-104.
	Graf, W. L. 1999. Dam nation: A geographic census of American dams and their large-scale hydrologic impacts. *Water Resources Research*, 35(4): 1305-1311.
Week 9	Dams, development and displacement
	Biswas, A.K. 2007. Dams: cornucopia or disaster? *International Journal of Water Resources Development*, 20(1): 3-14.
	Special screening of *Up the Yangtze*, time & place TBA
Week 10	Water for cities – historical perspectives and future challenges
	Varis, O. and L. Somlyody, 1997. Global Urbanization and Urban Water: Can Sustainability be Afforded? *Water Science and Technology*, 35(9):21-32.
	Fitzhugh, T.W. and B.D. Richter, 2004. Quenching Urban Thirst: Growing Cities and Their Impact on Freshwater Ecosystems. *BioScience*, 54(8): 741-753.

Part IV: Water conflict: politics, economics and human rights

Week 11	Transboundary river basins and the nature of water conflict
	Postel, S. and A. Wolf, 2001. Dehydrating Conflict. *Water Policy, Foreign Policy* (Sept/Oct), 60-67.
Week 12	Water conflicts in international river basins and prospects for cooperation
	Wolf, A. T. 1999. "Criteria for Equitable Allocations: the Heart of International Water Conflict." *Natural Resources Forum*, 23: 3-30.
Week 13	Commodification of water
	Glennon, R. 2003. "Bottling a Birthright?" in B. McDonald and D. Jehl (eds), Whose Water Is It?, National Geographic Society, pp. 9-24.
Week 14	Water as a human right: views on poverty and gender in water allocation policies

	Barlow, M.. 2003. "The World's Water: A Human Right or a Corporate Good?" in B. McDonald and D. Jehl (eds), *Whose Water Is It?*, National Geographic Society, pp. 25-40. Jordan, S. and F. Wagner. 1993. "Meeting women's needs and priorities for water and sanitation in cities." *Environment and Urbanization*, 5(2):135-145
Week 15	Prospects for sustainable water management Gleick, P.H., 2003. Global Freshwater Resources: Soft-path Solutions for the 21-st Century. *Science*, 302: 1524-1528.

PROJECTS:

Term projects give students an opportunity to select and explore a water resources issue of interest. Two options are available for the project, providing students with opportunities to work in groups or individually. The projects also provide various formats for presentation (oral or written). Projects must be of very high quality, demonstrating thorough research/reading on the option you have selected. Students must submit their project preferences to the instructor by [DATE]. Projects will be approved and a presentation schedule will be distributed on [DATE]. Students are encouraged to meet with the instructor to discuss project ideas.

Option 1: Current water resources management issues
Students selecting this option will explore case studies on one of three course themes: dams and river management, urban water, or hydropolitics. Students may work individually or in groups of two to research and present their case study, using materials provided by the instructor and supplemented by students. The presentation should be roughly 20 minutes in length and delivered with a power point slide presentation. Students selecting this option must submit a draft of their power point slides to the instructor *one week prior to the presentation* and must hand in *on the day of their presentation* a written document that includes (1) an abstract, (2) an annotated bibliography of sources used in the presentation, (3) and written summary of contributions of authors (for group presentations only). Presentation case studies are listed below. Students may have the option to select an alternate case study in consultation with the instructor.

Dams and river management

- The Colorado River basin: irrigating the arid west and use of controlled floods for ecosystem restoration
- The Columbia River basin: implications for commerce, development and salmonid conservation
- Taking down the dams: the case of the Elwha River, Olympic Peninsula, Washington
- Down East: Atlantic salmon conservation and dam removal on the Kennebec River, Maine

Urban water

- Watershed protection and New York City's water supply
- Human health and the development of Chicago's water supply system
- Urban-rural conflicts and the development of Los Angeles' water supply system

Hydropolitics

- Political conflict and marginalization in the Jordan river basin
- Power, politics, and development in the Tigris/Eurphrates river basins
- Development and conflict in the Mekong river basin

Option 2: Critical review of a water resources text

Students selecting this option will work individually to read and write a critical evaluation of a water resources text. The paper must be 10-15 pages in length (typed, double-spaced) and should address the following questions:

- Who is the author of the book? What are his/her qualifications for writing on this topic?
- What tools does the author use to relate his/her ideas in this book (interviews, case studies, historical accounts, data analyses)?
- What key issue(s) regarding water resources does the author raise in this book (you may choose to describe all issues briefly or described selected issues in some depth)?
- What is the author's perspective on the issues (is he/she unbiased, biased)?
- How has this book contributed to what you have learned in this class?

The paper will be *due on* [DATE].

Titles of approved books are listed below. These texts have been selected to cover a diversity of perspectives and issues in water resources. All are available through major booksellers (but may have to be ordered) or online at www.amazon.com. Students wishing to read/review another title should submit a request to the instructor in writing (by email).

- Amery, H. and A. Wolf. 2000. *Water in the Middle East: A Geography of Peace.* Austin, TX: University of Texas Press (293 pp).

- Barlow, M. and T. Clarke, 2002. Blue Gold: The Fight to Stop the Corporate Theft of the World's Water. The New Press. 250pp.

- Glennon, R. J. 2002. *Water Follies: Groundwater Pumping and the Fate of America's Fresh Waters.* Island Press (304 pp).

- Hillel, D. 1994. *Rivers of Eden: War, Peace and the Quest for Water in the Middle East*. New York: Oxford University Press (329 pp).

- Postel, S. 1999. *Pillar of Sand: Can the Irrigation Miracle Last?* W. W. Norton & Co. (313 pp).

- Rothfeder, J. 2001. *Every Drop for Sale: Our Desperate Battle over Water*. Tarcher Publishing (256 pp).

- Shiva, V. 2002. *Water Wars: Privitization, Pollution and Profit*. South End Press (156 pp).

- Ward, D. R. 2002. *Water Wars: Drought, Flood, Folly, and the Politics of Thirst*. Riverhead Books (251 pp.)

- Wilkinson, C. F., 1992. *Crossing the Next Meridian: Land, Water and the Future of the American West*. Island Press. 366 pp.

FIELD TRIPS:

Each field trip focuses on a topic covered in the course and provides students with an opportunity to explore issues faced by water scientists and managers. Each student must participate in *one field trip* and hand in a 3-5 page (typed, double spaced) written report on the trip. More details on the field trip dates and transportation options will be provided early in the semester. Field trip guides will be provided to students prior to each trip.

Your trip report should address the following:
- What was the topic and site of the field trip?
- What issues faced by water managers or scientists were discussed/described on this trip?
- What approaches or technologies are used by water managers or scientists to address challenging issues described on this trip?
- How did the content of this field trip add to what you have learned in the classroom?

Field trip 1: Urban hydrology
[DATE] self-guided walk and 4:30-5:30pm group meeting; transport by foot, bike or city bus.
This trip is a walking tour of the Englesby Brook watershed in Burlington. The brook flows from the golf course south of UVM's Redstone campus to its outlet at Oakledge Park. We will discuss urban watershed management issues, water quality and beach closure concerns, and on-going restoration activities in the watershed. We will also visit the site of the U.S. Geological Survey's stream gaging station and learn how runoff and water quality measurements are made.

Field trip 2: Municipal drinking water supplies
[DATE] 4:00-5:30pm; van transportation provided.
On this trip, we will visit the offices of the Champlain Water District in South Burlington to learn how water from Lake Champlain is withdrawn, treated and distributed to local communities. The Champlain Water district was recently awarded a citation of merit by the Environmental Protection Agency for excellence in drinking water treatment technologies.

Field trip 3: Hydropower dams
[DATE] 3:00-4:30pm; van transportation provided.
This trip includes stops at local hydropower facilities and discussions with dam operators. We'll see facilities for fisheries management and see how dam operators are working with community stakeholders to address environmental considerations.

Field trip 4: Women, Development and Water *(this option varies by semester according to availability of guest speakers)*
[DATE] 1:00-2:45pm (location to be announced)
This is an on-campus opportunity to hear a public seminar presentation by Dr. Farhana Sultana, a professor at Syracuse University who has conducted research on the role of gender in water development projects. You'll join a larger audience attending her seminar and have time after the seminar to speak with her about her research.