

# Teaching Sustainability at UVM

## **Sustainability Faculty Fellows**

A Professional Development Program in  
Sustainability Education, 2009–2013



A Report from the Office of Sustainability  
University of Vermont, June 2013



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A report by Tarah Rowse, Office of Sustainability

## **PROGRAM PARTNERS**

Partners have provided overarching program coordination, funding for additional fellows, financial support for food and facilities, and in-kind contributions in the form of expert trainings.

### **Environmental Program**

Stephanie Kaza, Professor and Director

### **Center for Teaching and Learning**

Wendy Verrei-Berenback, Assistant Director

### **Office of Sustainability**

Gioia Thompson, Director

Tarah Rowse, Graduate Fellow (2011–2013)

Tatiana Abatemarco, Graduate Fellow (2009–2011)

### **GreenHouse Residential Learning Community**

Walter Poleman, Director

### **Shelburne Farms (Community Partner)**

Jennifer Cirillo, Director of Professional Development

## **FINANCIAL SUPPORT**

The Office of the Provost provides professional development funds for 12 fellows each year to support curriculum development efforts.

## **PROGRAM WEBSITE**

[www.uvm.edu/ctl/sffp](http://www.uvm.edu/ctl/sffp)

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# From the President



“I am proud of the accomplishments of this program, and I look forward to seeing the evolution of many more sustainability-related courses in the UVM curriculum offerings.”

It is my privilege to introduce our signature faculty development program in environment and sustainability. In just four years, the Sustainability Faculty Fellows Program has engaged 66 faculty across 30 academic units to develop or modify over 60 courses and units with a sustainability-related focus.

The University of Vermont, as the flagship research institution in the state, has taken many impressive steps to create a culture of environmental responsibility among its students, staff, and faculty. We are nationally known as a leading land grant university for our initiatives in environmental education, environmental research, and institutional environmental practices.

Members of the UVM community are active participants in the national dialogue on sustainability education. The faculty members in this program have added critical mass to that conversation and provided many avenues for students to learn about sustainability within their areas of study. In this report you will learn about some of our faculty successes in transforming business, health, engineering, and education courses.

Throughout this report I am very pleased to see how faculty creativity has improved our curriculum offerings in environment, sustainability, and public health. These faculty members are part of a groundswell of interest in making today's education relevant to the important concerns of the twenty-first century. I feel very strongly that our educational offerings must provide students with the knowledge and skills they need to meet the difficult environmental, social, and economic challenges facing the future.

I am proud of the accomplishments of this program, and I look forward to seeing the evolution of many more sustainability-related courses in the UVM curriculum offerings.

**Tom Sullivan**, UVM President  
Spring 2013

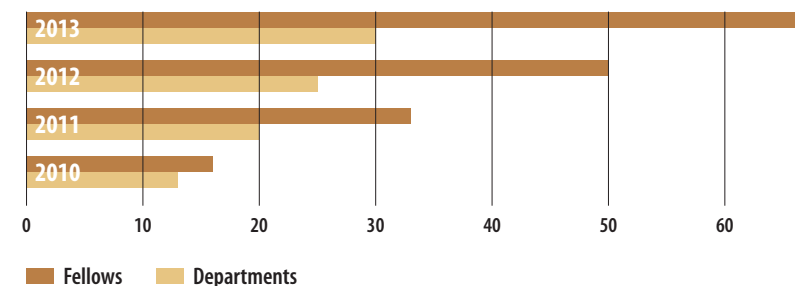
## Program Goals

The UVM Sustainability Faculty Fellows Program seeks to develop a multidisciplinary faculty learning community engaged in a yearlong exploration of sustainability, the scholarship of teaching, learning, collaboration, and community building. The program goals are as follows:

- Create a community of faculty who are committed to integrating interdisciplinary approaches to sustainability into the UVM curriculum.
- Enhance the understanding of sustainability concepts among faculty and students, particularly those not trained in environmental fields.
- Explore teaching and course design strategies that will engage students in sustainability from an interdisciplinary approach.

## Program Growth

In January 2009 program partners Stephanie Kaza and Wendy Verrei-Berenback attended the Association for the Advancement of Sustainability in Higher Education (AASHE) “Sustainability Across the Curriculum Leadership Workshop.” The first two years were supported by Instructional Incentive Grants through the Center for Teaching and Learning. The first cohort of 16 fellows started in the fall of 2009 with the first winter institute occurring in January 2010. During years three and four the Provost's office supported the program, providing professional development funds. The program has grown to include 66 fellows representing 30 academic departments and all schools and colleges at UVM.





# Program Design



“The Sustainability Faculty Fellows Program was outstanding! The organizers created a journey for participants from theoretical principles to concrete application, with possibilities for new course designs. Readings took on new and expanded meaning through conversations with amazing colleagues in different disciplines. This is an example of ‘higher learning’ at its best!”

Cami Davis, Fellow, 2013

## Faculty Learning Communities

The UVM Sustainability Faculty Fellows (SFF) Program is rooted in the Faculty Learning Communities (FLCs) model. FLCs are small, multidisciplinary groups of faculty who engage in a yearlong scholarly pursuit of teaching, learning, and community building within a theme, in this case, sustainability. This model increases faculty interest in teaching by providing institutional support for the adoption of new teaching methods. The social and emotional support needed to change teaching behaviors is stimulated through a collegial environment of people who have deliberately chosen to participate. The vision is to create communities of faculty members who continue to collaborate and practice what they’ve learned through their participation in the program.

The UVM SFF curricular approach includes both education about sustainability and education for sustainability. This approach not only explores core conceptual knowledge, but also examines pedagogical strategies necessary to teach students how to live sustainably in the world. It encourages faculty to move beyond the transmission of information to the development of learning environments that actively engage students in critical reflection, analysis, and application of knowledge. The program addresses four major topics:

- Definitions of sustainability
- Systems thinking core concepts
- Education for sustainability: course design and teaching strategies
- Interdisciplinary thinking and teaching

Additionally, we encourage fellows to consider high-impact practices as identified in the 2008 Association of American Colleges and Universities report *High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter* by George D. Kuh. Particularly germane are practices such as collaborative assignments/projects, experiential and service learning, and writing intensive courses.

## A Building Dialogue

Fellows attend lunches early in the semester to help them get acquainted. These gatherings build community and set the foundation for strong collegial relationships during the cornerstone event, the two-day **January Institute**. Day one of the January Institute is held at Shelburne Farms with day two held on the UVM campus. The choice and timing of these locations is intentional. The quiet winter beauty of Shelburne Farms encourages personal reflection and connection to place, while day two on the UVM campus brings the fellows back to an academic environment. At Shelburne Farms, fellows



explore the grounds, think through multiple perspectives and definitions of sustainability, apply systems thinking concepts, and consider the social justice implications of living in a sustainable world. They have time to engage in dialogue with peers and privately write in journals on the critical issues of sustainability.

Back at UVM participants focus on the working academic landscape. Fellows tackle course design to integrate sustainability concepts. They consider interdisciplinary collaborations and infuse information literacy skills when possible. Faculty and staff from curriculum and instruction programs are available to consult with the fellows. These include Writing in the Disciplines, Community-University Partnerships and Service Learning (CUPS), Library Instruction, and the Center for Teaching and Learning (CTL). By the end of the day, fellows are well on their way to developing a plan of action for course implementation. After the institute, conversations continue at two spring luncheons, held to provide support and report on final course designs.

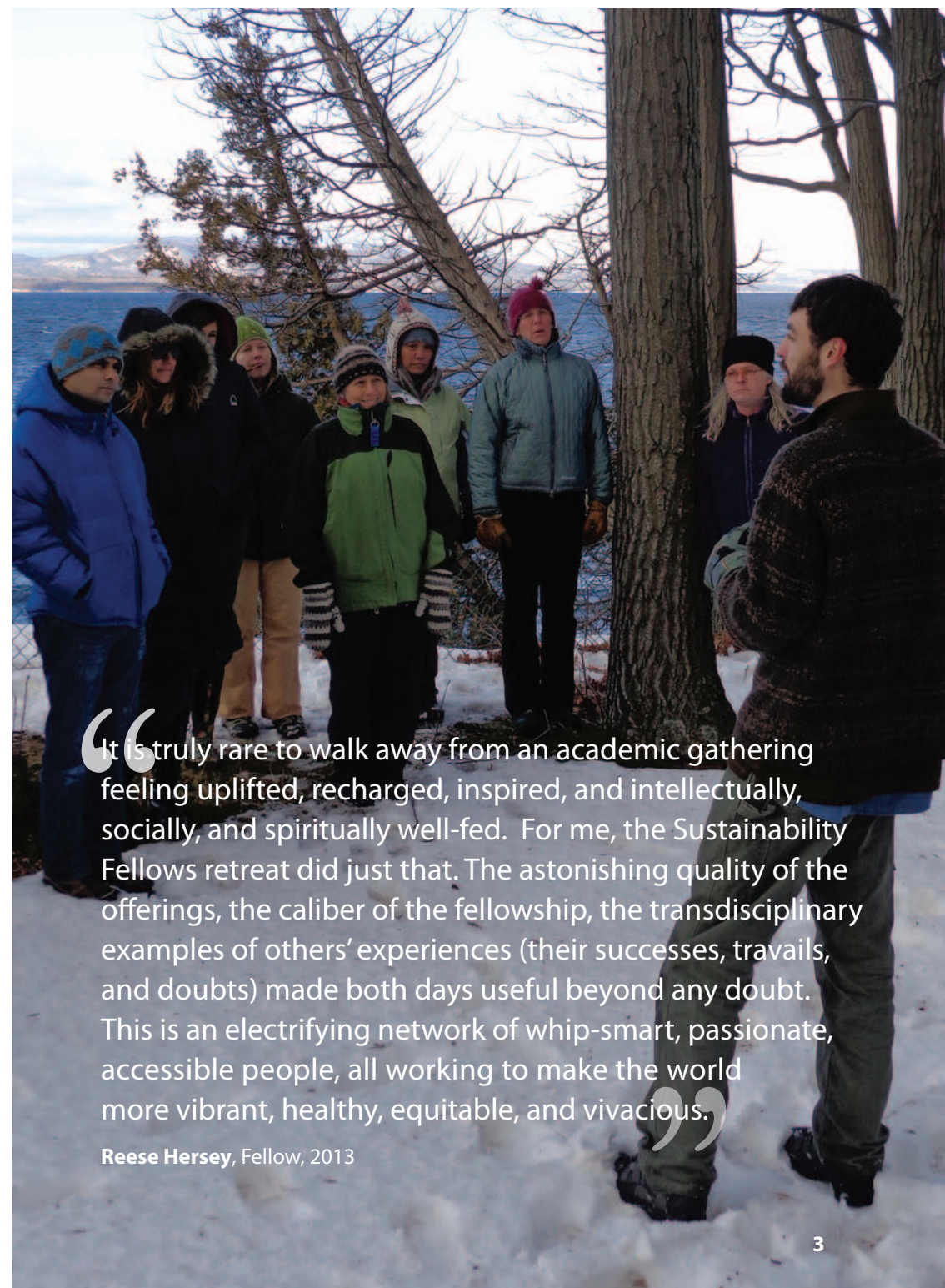
## THE JANUARY INSTITUTE

### Day 1—Shelburne Farms

- Morning*
- Faculty learning communities
  - Exploring place as a framework for learning
  - Field groups: signs of seasons, cycles, systems
  - Observing patterns and process
- Afternoon*
- Defining sustainability: problems/opportunities
  - Systems thinking and sustainability  
(Themes: feedback, constraints, drivers, tipping points)
  - Sustainability, diversity, and privilege
  - Reflections on individual and group learning  
(Themes: emergent qualities, reciprocal relationships)

### Day 2—University of Vermont Campus

- Morning*
- Frameworks for sustainability and introduction to “green” thinking
  - Campus sustainability  
(Theme: campus as a learning laboratory)
  - Course design for sustainability
- Afternoon*
- Course design mentoring and support team consultations
  - Working with community to form partnerships and projects
  - Sustainability resources for the curriculum



“It is truly rare to walk away from an academic gathering feeling uplifted, recharged, inspired, and intellectually, socially, and spiritually well-fed. For me, the Sustainability Fellows retreat did just that. The astonishing quality of the offerings, the caliber of the fellowship, the transdisciplinary examples of others’ experiences (their successes, travails, and doubts) made both days useful beyond any doubt. This is an electrifying network of whip-smart, passionate, accessible people, all working to make the world more vibrant, healthy, equitable, and vivacious.”

Reese Hersey, Fellow, 2013

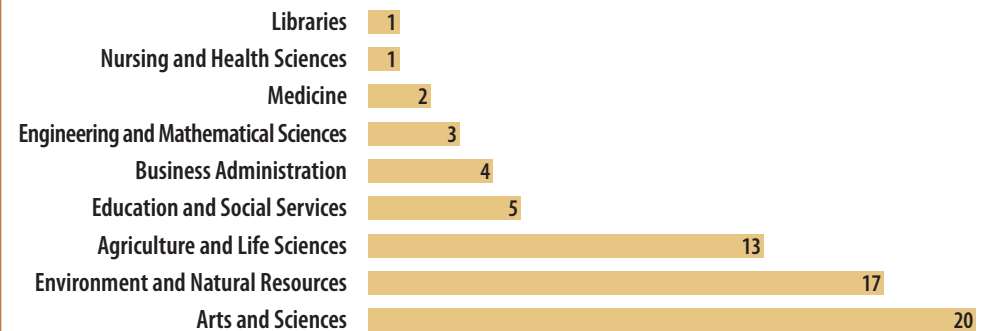


# The Faculty Fellows

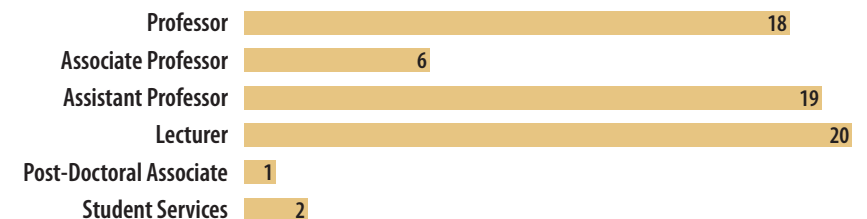


**The 66 fellows** represent a diverse cross-section of academic disciplines and ranks at the University of Vermont. All schools and colleges are represented with Arts and Sciences, Environment and Natural Resources, and Agriculture and Life Sciences having the strongest participation. Across the campus 30 academic units have engaged with the program.

## NUMBER OF FELLOWS BY SCHOOL AND COLLEGE



## NUMBER OF FELLOWS BY RANK



## ACADEMIC UNITS

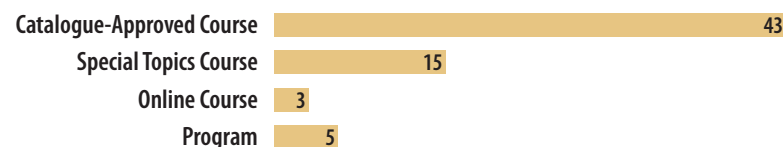
Anthropology	Engineering	Library Reference	Plant Biology
Art & Art History	English	Medicine	Political Science
Business	Environmental Sciences	Natural Resources	Psychology
Community Development & Applied Economics	Environmental Studies	Nursing	Social Work
Chemistry	Forestry	Nutrition & Food Sciences	Sociology
Classics	Geography	Pathology	Wildlife & Fisheries
Education	Geology	Philosophy	Biology
	Leadership & Developmental Sciences	Plant & Soil Science	Women's & Gender Studies

“The Sustainability Faculty Fellows Program is critical to meeting the University of Vermont’s national leadership commitment to sustainability education across campus. The Office of Sustainability is pleased to be a partner in this innovative program. We have been delighted to see the success of these four faculty cohorts in creating their own new partnerships and learning opportunities to integrate sustainability into the UVM curriculum.”

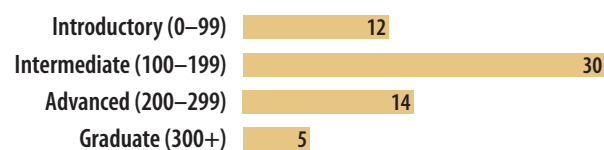
**Gioia Thompson**, Director, Office of Sustainability

**Fellows incorporate** sustainability into catalogue-approved and special topics courses at all levels, from introductory to graduate, with most courses falling at the intermediate level. A full 65% of the courses taught by fellows have a class size of fewer than 40 students.

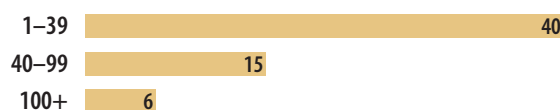
#### TYPES OF APPLICATIONS BY FELLOWS



#### COURSE LEVELS TAUGHT BY FELLOWS



#### SIZE OF COURSES (STUDENT ENROLLMENT) TAUGHT BY FELLOWS



#### SAMPLE COURSES

<b>CORE</b>	Earth Systems Governance (Political Science), Robert Bartlett Development, Displacement, and Environment (Geography), Pablo Bose Ecofeminism (Women's and Gender Studies), Annika Ljung-Baruth
<b>COMPLEMENTARY</b>	Environmental and Social Reporting (Business), Marti Woodman Ethics of Eating (Philosophy), Tyler Doggett Petrology (Geology), Laura Webb
<b>INTRODUCTORY</b>	Introduction to Landscape Restoration (Environmental Studies), Rick Paradis Social Psychology (Psychology), Sue Fenstermacher Student Affairs Profession (Higher Education), Kathleen Manning

## SUSTAINABILITY IN THE CURRICULUM

**61 courses developed or modified by fellows in the program**

**48 courses offered between spring 2010 and summer 2013**

**116 total course offerings during this span, for a total student enrollment of 7,568**

The 61 courses are categorized by the scope of sustainability content included in the curriculum.

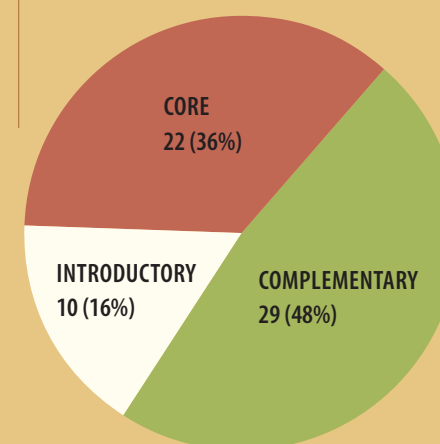
**Core:** Uses sustainability as a primary concept or lens throughout the course design.

**Complementary:** Includes a sustainability-specific section, or ties in sustainability as a theme during course instruction.

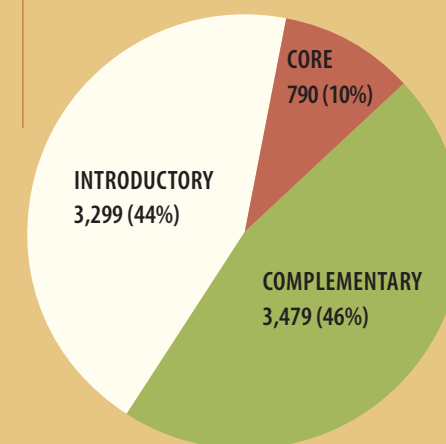
**Introductory:** Includes an element of sustainability, usually as a reading, assignment, or single lecture.

More than one-third of the courses were categorized as Core due to the primary emphasis on sustainability in the course. Almost half of the courses incorporated sustainability at the Complementary level, as a theme throughout the course or as a specific section. Approximately one-sixth of the courses touched on sustainability only briefly and were categorized as Introductory.

#### 61 TOTAL COURSES



#### 7,568 TOTAL ENROLLMENT



# Teaching in Action



“This experiment in professional development has stimulated surprising collaborations and built a convivial learning community engaged with issues of sustainability. We have now reached critical mass among the faculty fellows and are seeing a shift to systems thinking essential to meet the critical challenges of the twenty-first century.”

**Stephanie Kaza**, Director, Environmental Program

## Changing Perspectives



*“It takes quite a bit of time to get the concepts across to engineering students. We have a three-course series that attempts to engage students in sustainability. Our assessment data show headway, but it’s taken three years.”*

**Donna Rizzo**, Fellow, 2011

## Lecture Course Impacts

Fellows teaching large science introductory courses have redesigned syllabi to include sustainability themes. In **General Chemistry**, Associate Professor Rory Waterman added a new section on green chemistry and systems thinking. In **Organic Chemistry**, Lecturer Sandy Wurthmann revamped lab experiments and practices to reduce environmental impact. Lecturer Laura Hill Bermingham, who teaches **Introduction to Botany**, added readings and discussions to help students link principles of sustainability with principles of ecology. Under Senior Lecturer Larry Rudiger’s direction, **General Psychology** students are exploring models for coping with climate change and the role of intention in environmental action. These courses expose hundreds of UVM students each year to concepts of sustainability applied to traditional disciplines.

## Collaborative Teaching

Engineering Professors Donna Rizzo and Nancy Hayden partnered to develop a sequence of courses in systems and engineering design. Students develop competency in **Modeling Environmental and Transportation Systems** to show dynamic interactions among people, economic forces, and environmental responses. The goal is to encourage engineers to become long-term sustainable thinkers.

Environmental Studies Professor Tom Hudspeth teaches **Sustainability Education**, a service-learning course that partners with local schools and nonprofits in curriculum development. Hudspeth has worked closely with Education Assistant Professor Leon Walls on his **Science of Sustainability** course. Both courses offer an interdisciplinary approach to gaining the knowledge, skills, and attitudes necessary for improving the health and well-being of present and future generations.



## Building Resilience



*"After Hurricane Irene, there was a wealth of opportunity to work in communities not only to talk about adaptation, but to transcend and translate sustainability as it might be allied with climate adaptation or risk management around climate-implicated disasters."*

Amy Seidl, Fellow, 2011

## Food Systems Highlights

Sustainability Fellows have been contributing to food systems research and education since the designation of UVM's transdisciplinary research spire in 2010. Plant and Soil Science and Environmental Studies Associate Professor Ernesto Mendez integrated sustainability themes into his **Advanced Agroecology** course, adding a sustainability analysis lab in which students assess a local food system or partner farm. Anthropology Assistant Professor Teresa Mares recast her **Food, Culture and Politics** course to emphasize a holistic notion of sustainability as applied to food systems. Nutrition Associate Professor Amy Trubek collaborated with Philosophy Assistant Professor Tyler Doggett to offer a new course on **Ethics and the Food System**. UVM students are drawn to the growing number of food and plant science courses that analyze the complexities of all aspects of food growing, harvest, distribution, and consumption.

## More Climate Classes

The Fellows Program supports efforts to increase the number of climate offerings at UVM. From the science of climate change to adaptation and mitigation, more climate courses are being offered than ever before. Geology Professor Charlotte Mehrtens' course on **Global Climate Change and Fossil Fuels** aims to critically evaluate media views of climate change and predictions for future fossil fuel supplies. Research Assistant Professor Richard Watts' course, **Sustainable Transportation Planning**, uses critical thinking exercises to find alternative solutions to transportation challenges. **Adaptation to Climate Change**, developed by Environmental Studies Lecturer Amy Seidl, examines the role of adaptation, exploring ecological and evolutionary implications of climate change on natural systems and cultural implications for resilience in human systems.

## Reshaping Curriculum



*"The program taught me how to take a concept and operationalize it into a semester-long course. It helped me figure out how to make bite-size modules with the sustainability theme threaded through every module."*

Hollie Shaner-McRae, Fellow, 2010

## Emerging Health Topics

Two new health care courses have been developed through the Fellows Program. Hollie Shaner-McRae, nurse and adjunct Assistant Professor in the College of Medicine, used her experience to develop a course on **Greening Healthcare Systems**. Shaner-McRae presented her course development and student experience at the national Practice Green Health Conference in 2011. Post-Doctoral Associate in Medicine Christine Vatopec designed a new course, **Ecology, Health and Well-Being**, which explores relationships among environment (natural and built), human health, and well-being through historical, sociological, and ecological perspectives.

## New Business Curriculum

Business school representation in the Fellows Program began with Rocki-Lee DeWitt, former dean and Professor of Management. DeWitt redesigned her Honors College seminar, **Returns from the Land**, to add sustainability principles in land use decisions and property rights. The 2011–2012 cohort of fellows brought three more business school professors into the program: Marilyn Lucas, Marti Woodman, and Jie Zhang, who teach **Production and Operations Management**, **Environmental and Social Reporting**, and **Production and Operations Analysis**, respectively. This cohort has been instrumental in providing support for a schoolwide curriculum revision to emphasize sustainability, entrepreneurship, and globalization.

# Program Evaluation



**The responses** we have received from fellows have been invaluable in developing the program's goals of encouraging a community of learning, inquiry, and practice that brings education and the concepts of sustainability together. Our evaluation of application materials, end-of-program surveys, and a post-program survey and focus group have identified the following as the most beneficial results:

- **Developing a collaborative network of faculty** from across departments—Fellows noted that one of the most valuable aspects of the program was the opportunity for networking, sharing ideas and information with colleagues, and building connections.
- **Building a practical understanding of sustainability**—As a result of participating in the trainings, fellows feel they are better prepared to include sustainability in their curricula and are more confident of their understanding of sustainability frameworks such as connecting systems and sustainability and multiple perspectives on

sustainability. They noted that the tools and resources (such as readings and other course materials) and place-based learning opportunities had the most influence on their understanding.

- **Defining teaching and course design strategies** to engage students in sustainability—Fellows were given ample time for reflection and action including support and a structure to work on curriculum development. They reported their appreciation of the importance of place-based learning and the opportunity to integrate new understanding.

In addition, fellows reported several benefits of the program outside of their own learning and collaboration, such as new opportunities for internships and jobs for students, professional academic networking (presentations /posters/discussions), and published papers.

## RESOURCES

**Association for the Advancement of Sustainability in Higher Education (AASHE)** Workshops for faculty leaders of all disciplines who wish to develop curriculum change programs around sustainability on their campuses.

**AASHE Resources on Sustainability Curriculum** An AASHE Resource Center section focusing on formal education programs and courses that address sustainability.

**Center for Ecoliteracy** Support for advancing education for sustainable living at all academic levels.

**Journal of Sustainability Education** A forum for academics and practitioners to share, critique, and promote research, practices, and initiatives that foster the integration of economic, ecological, and social-cultural dimensions of sustainability within formal and nonformal educational contexts.

**U.S. Partnership for Education for Sustainable Development** A network of individuals, organizations, and institutions in the United States dedicated to education for sustainable development. It acts as a convener, catalyst, and communicator working across all sectors of American society.

**Visualising Sustainability** A New Zealand website providing more than 250 graphical representations of sustainability.



# Sustainability Faculty Fellows

## 2009–2010

Rocki-Lee DeWitt, Business Administration  
Tyler Doggett, Philosophy  
Nancy Hayden, Civil and Environmental Engineering  
Thomas Hudspeth, Environmental Studies  
Laurie Kutner, Bailey/Howe Library Information and Instruction Services  
Annika Ljung-Baruth, English, Women's and Gender Studies  
Ernesto Mendez, Environmental Studies, Plant and Soil Science  
Don Ross, Plant and Soil Science, Environmental Sciences  
Larry Rudiger, Psychology  
Hollie Shaner-McRae, Nursing  
Leon Walls, Education  
Qingbin Wang, Community Development and Applied Economics  
Richard Watts, Community Development and Applied Economics, Environmental Studies  
Beverley Wemple, Geography  
Bob Winkler, Environmental Studies  
Sandy Wurthmann, Chemistry

## 2010–2011

Laura Hill Bermingham, Plant Biology  
Pablo Bose, Geography  
Yolanda Chen, Plant and Soil Science  
Jennifer Dickinson, Anthropology  
Gary Flomenhoft, Environmental Sciences  
Jeffrey Hughes, Natural Resources, Plant Biology  
Tom Macias, Sociology  
Char Mehrtens, Geology, Environmental Sciences  
Amy Nickerson, Nutrition and Food Sciences  
Teage O'Connor, Environmental Studies  
Lance Polya, Environmental Studies  
Donna Rizzo, Civil and Environmental Engineering  
Amy Seidl, Environmental Studies  
Amy Trubek, Nutrition and Food Sciences  
Mark Usher, Classics  
Rory Waterman, Chemistry  
Alex Zakaras, Political Science

## 2011–2012

Katharine Anderson, Environmental Studies  
Alexandru Balas, Political Science  
Robert Bartlett, Political Science  
Terry Delaney, Plant Biology  
Marilyn Lucas, Business Administration  
Kathleen Manning, Higher Education and Student Affairs  
Teresa Mares, Anthropology  
Cheryl Morse, Geography  
Jed Murdoch, Wildlife and Fisheries Biology  
Rick Paradis, Environmental Studies  
Christine Vatovec, Medicine  
Kimberly Wallin, Forestry  
Deane Wang, Natural Resources  
Laura Webb, Geology  
Marti Woodman, Business Administration  
Haley Woodside Jiron, Education  
Jie Zhang, Business Administration

## 2012–2013

Lynn Blevins, Medicine  
Cecilia Danks, Environmental Studies  
Cami Davis, Art and Art History  
Mandar Dewoolkar, Civil and Environmental Engineering  
Valerie Esposito, Environmental Policy (Champlain College)  
Sue Fenstermacher, Psychology  
Gillian Galford, Natural Resources  
Elizabeth Getchell, Environmental Studies  
Reese Hersey, Geography, Environmental Studies  
Stephanie Hurley, Plant and Soil Science  
Matt Kolan, Natural Resources  
Steve Libby, GreenHouse Residential Learning Community  
Catherine Lowther, Sustainability (Goddard College)  
Scott Matter, Anthropology  
Kelly Melekis, Social Work  
Alan Tinkler, Education  
Marie Vea-Fagnant, Natural Resources  
Asim Zia, Community Development and Applied Economics

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*Additional reports available from the UVM Office of Sustainability*

Greening UVM:  
Campus Environmental Report 1998

Tracking UVM:  
Environmental Report Card 2002

*Soon to be released*

Powering UVM:  
Clean Energy Fund Report

Cooling UVM:  
Greenhouse Gas Inventory and Climate Action Plan



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