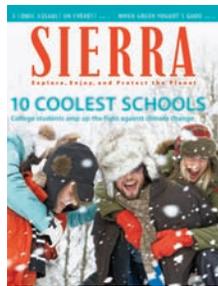


# SIERRA



## SIERRA MAGAZINE'S 2010 "COOLEST SCHOOLS" QUESTIONNAIRE



2007



2008



2009

- EFFICIENCY
- ENERGY SUPPLY
- FOOD
- ACADEMICS
- PURCHASING
- TRANSPORTATION
- WASTE MANAGEMENT
- ADMINISTRATION
- FINANCIAL INVESTMENTS
- OTHER INITIATIVES

# SIERRA

*Sierra*, the award-winning magazine of the Sierra Club, is compiling information for our fourth annual “Coolest Schools” issue, which will rate American colleges and universities according to their environmental practices, green initiatives, and caliber of sustainability-oriented education.

Schools that score highly in these realms may be contacted for further discussion and will receive recognition in the magazine’s September/October issue. Please fill out this interactive PDF as thoroughly as possible, save it with your responses as “2010\_coolschools\_ your school’s name” and email it to [cool.schools@sierraclub.org](mailto:cool.schools@sierraclub.org) no later than **March 20, 2010**.

Note that this questionnaire will become a public document and that we will not be altering your responses before publishing them online. Please answer as thoroughly as possible. Questions left blank will receive no credit, and if a question requests a percentage, you must provide a percentage. The scoring key will be available online once the issue is published.

As the publication of the nation’s oldest and largest environmental nonprofit, *Sierra* has a readership of more than 1 million engaged and educated citizens.

Many thanks for your participation.

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**School name:**

**Contact name and title:**

**Contact phone:**

**Contact email:**

**School’s city and state:**

**Number of students:**

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**HONOR PLEDGE:** By completing and submitting this questionnaire, you are certifying that all statements in this document are true to the best of your knowledge.

**INITIAL:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

## Category 1: Energy Supply

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1. Please break down the energy types that your campus uses for electricity by percentage. If the school purchases its electricity from a utility company, this information should be available from that company.

____% Coal	____% Wind	____% Biomass
____% Natural Gas	____% Solar	____% Geothermal
____% Nuclear	____% Hydro	____% Other _____

2. What type(s) of energy does your campus use for heating buildings (e.g., natural gas, biomass, coal)?

____% Coal	____% Biomass
____% Natural Gas	____% Geothermal
____% Electricity	____% Fuel Oil

If cogeneration, please explain.

## Category 2: Efficiency

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1. What percentage of campus buildings completed within the past three years have a LEED certification of at least silver?

\_\_\_\_\_%

Note whether the certification is higher than silver.

2. What percentage of water used for campus landscaping is from recovered, reclaimed, or untreated sources?

\_\_\_\_\_%

3. What percentage of campus lighting fixtures are energy-efficient (e.g., compact fluorescent, LED, or equipped with motion sensors, automatic daylight shutoff, or other energy-saving features)?

\_\_\_\_\_%

4. What percentage of campus appliances are Energy Star-rated?

\_\_\_\_\_%

5. Does the institution have underway a program of energy-efficiency retrofitting projects, such as improving building insulation or sealing heating and cooling ducts?

## Category 3: Food

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1. What percentage (in dollars) of food served at cafeterias is grown or raised within 100 miles of the campus?

\_\_\_\_\_ %

2. What percentage (in dollars) of food served at campus cafeterias is USDA-certified organic?

\_\_\_\_\_ %

3. Do campus cafeterias source seafood that is deemed sustainable by the Marine Stewardship Council, the Monterey Bay Aquarium's Seafood Watch Program, or a similar program?

4. What percentage of entrées served in campus dining locations include meat? If the meat is produced sustainably (for example, free-range or grass-fed), explain.

\_\_\_\_\_ %

5. Are nutritionally complete vegetarian and/or vegan options available at every meal?

6. Is bottled water sold or distributed on campus?

7. Does your school maintain a campus farm or garden? Does it use organic methods? Please describe the garden and methods used.

## Category 4: Academics

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1. Does your school offer any environmental- and/or sustainability-related majors, such as environmental studies, ecology, or sustainable agriculture? If so, please list them all.

2. Does your school offer classes about clean technologies, including topics such as energy efficiency and solar-wind energy engineering? If so, please list them all.

3. Does your school provide students with a list of environmental and/or sustainability classes to make such courses easy to identify? Please provide a link, if available.

4. Please provide names of standout professors who work on environmental and/or sustainability issues and list their accomplishments, including awards, honors, and publications.

5. Do you have environment- and/or sustainability-related centers, programs, or research institutions associated with your school? If so, please provide their names and a description.

6. Is an environment-themed class a core curriculum requirement? If yes, please provide the name(s) of the course(s).

7. What percentage of academic departments offer environment- or sustainability-related classes?

\_\_\_\_\_ %

## Category 5: Purchasing

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1. Does your school have a sustainable-purchasing policy? If yes, briefly explain.

2. What percentage of paper used on campus is made from at least 30% postconsumer recycled content?

\_\_\_\_\_%

Does your school purchase paper that is Forest Stewardship Council-certified?

3. Does your school have a policy to purchase Electronic Product Environmental Assessment Tool (EPEAT)-certified (or similar) electronics? If yes, please describe.

4. Do you have packaging agreements with suppliers that minimize waste? If yes, please describe.

5. Does your school specify in its purchasing contracts that products with energy-saving features be installed or delivered with these features enabled?

## Category 6: Transportation

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1. Does your school provide a free shuttle service around campus and town? If yes, briefly explain.

2. What has your school done to promote bicycling as a transportation method?

3. Does your school encourage its students and employees to use public transit, carpool, or use some other form of alternative transportation? If yes, what are the incentives?

4. Approximately what percentage of students drive to school in a car?

\_\_\_\_\_ %

5. Approximately what percentage of faculty and staff drive to work in a car?

\_\_\_\_\_ %

## Category 7: Waste Management

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1. What is your campus's current waste-diversion rate (i.e., percentage of campus waste being diverted from landfills)?

\_\_\_\_\_ %

2. Does your campus provide recycling receptacles wherever there are trash cans?

3. Are recycling bins readily available at large events such as football games?

4. Does your school compost? If yes, are compost receptacles available at all or most on-campus dining locations?

5. Is your school committed to waste-reduction goals, such as zero waste? Please explain.

6. Does your campus administer a donation program for clothing and other used goods when students are moving out of student housing? If so, are bins located in every dormitory?

## Category 8: Administration

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1. Is environmental sustainability part of your institution's mission statement, guiding principles, or similar document? If so, please provide the text or link.

2. Does your school employ at least one person dedicated to overseeing campus environmental initiatives, such as a sustainability coordinator, or have a sustainability task force or committee? Is the coordinator position a part-time or full-time position?

3. Has your school made an official commitment to reducing its impact on climate change by setting goals of emission reductions by a certain date? If yes, does your school have a plan for achieving these reductions? If so, briefly explain the plan.

4. Has your school conducted a complete greenhouse-gas-emissions audit of its campus?

5. Has your school achieved a reduction in total annual carbon emissions? If yes, please explain and provide the benchmark year and percentage.



## Category 10: Other Initiatives

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1. Have any of your school's students effected positive environmental change on a campus, state, or national level? If so, please describe. (To nominate a specific student for greater attention in our coverage, please email [cool.schools@sierraclub.org](mailto:cool.schools@sierraclub.org) with his or her name, accomplishments, and contact information.)

2. Have students participated in environmental challenges or events such as the Solar Decathlon, environmental design contests, or environmental debates? If so, which events and how did they do?

3. Has your school set aside part of its campus as natural habitat, stipulated limited campus development, or enacted programs preserving its land? If so, please explain.

4. Does your school adhere to an indoor air-quality policy (e.g., the mandated use of nontoxic cleaning supplies)? If yes, describe the policy.

5. Does your school offer outdoor- or nature-based programs, classes, or extracurricular activities to students and/or faculty? If yes, please list and describe.

## Category 10: Other Initiatives, continued

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6. What specific actions has your school taken to improve its environmental sustainability since spring 2009? Please list all improvements.

7. Please use this space to address any other unique or interesting sustainability initiatives that have not been previously mentioned:

## APPENDIX: CENTERS/PROGRAMS/INSTITUTES & ASSOCIATIONS/CHAPTERS/ACTIVITIES

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
<b>Campus Sustainability Office</b>	<a href="http://www.case.edu/news/sustain/index.html">http://www.case.edu/news/sustain/index.html</a>	<p><b>Site Description:</b> Sustainability is the philosophy of the continuing process of making the world a livable place. This includes the commonly discussed ideas of recycling and energy conservation, but it also includes ideas of preserving biodiversity and natural ecosystems.</p> <p>Even ideas including long term building construction and composting fall under the philosophy of sustainability. Everyone has a part in sustainability, no matter what your job!</p> <p>Our program has come a long way since its inception in the mid-1990s, but we need your help to make this campus a sustainable one.</p> <ul style="list-style-type: none"> <li>• <a href="#">Sustainability FAQ</a></li> <li>• <a href="#">Undergrad Council</a></li> <li>• <a href="#">Energy Advisory Committee</a></li> <li>• <a href="#">Adopt a Building</a></li> <li>• <a href="#">Energy Conservation</a></li> <li>• <a href="#">Recycle</a></li> <li>• <a href="#">Sustainability Spotlight</a></li> <li>• <a href="#">Archived News</a></li> <li>• <a href="#">Further Resources</a></li> <li>• <a href="#">Work Order Requests / Feedback</a></li> </ul>

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
<p><b>Institute for Sustainability</b></p>	<p><a href="http://www.case.edu/sustainability/">http://www.case.edu/sustainability/</a></p>	<p>What is the path to a green, prosperous, more sustainable future? Finding that path, and helping steer society toward it, is one of the most pressing issues of our time, and is the focus of the Institute for Sustainability.</p> <p>Created in the spring of 2009, Case Western Reserve University's Institute for Sustainability brings a diverse array of scholars and students together to help chart the course to that brighter future.</p> <p>The Institute works in three broad areas:</p> <p><b>Research and Scholarship:</b> On the forefront of our knowledge, we ask the fundamental questions – and try to find answers – that will inform future actions.</p> <p><b>Education:</b> Today's students are tomorrow's decision-makers. We work to grow the capacity for real change through the strength of our educational programs.</p> <p><b>Community connection:</b> We are committed to engaging with external partners to address regional issues. Local action, global impact.</p>

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
<p><b>Fowler Center for Sustainable Value</b></p>	<p><a href="http://worldbenefit.case.edu/">http://worldbenefit.case.edu/</a></p>	<p>At the Fowler Center for Sustainable Value (formerly – ‘Center for Business as an Agent of World Benefit (B.A.W.B)’ ) we help pioneering companies, entrepreneurs, and industry associations transform and turn the world's social and ecological issues into bona fide business opportunities—uniting the strengths of markets with the epic challenge of achieving a sustainable earth.</p> <p>We provide solutions to the <i>how</i> of “doing well by doing good,” helping companies become the leading-edge stars of their industries through <a href="#">research</a>, <a href="#">education</a>, and <a href="#">practice</a> in two primary areas of focus:</p> <ul style="list-style-type: none"> <li>- <i>Sustainable Value</i> – transforming businesses to assure substantial benefit from addressing social and/or environmental issues, and</li> <li>- <i>Social Entrepreneurship</i> – solving social and/or environmental problems by applying new business models and tools.</li> </ul> <p><b>CORE AREAS:</b></p> <ul style="list-style-type: none"> <li>○ Practice</li> <li>○ Research</li> <li>○ Education</li> </ul> <p><b>CORE PROJECTS:</b></p> <ul style="list-style-type: none"> <li>○ World Inquiry</li> <li>○ Global Forum (<b>June 2009 - Global Forum</b>)</li> </ul>

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
Great Lakes Energy Institute	<a href="http://energy.case.edu/">http://energy.case.edu/</a>	<p><b>Mission</b> To enable the transition to advanced sustainable energy generation, storage, distribution and utilization, through coordinated research, development and education.</p> <p><b>Background</b> The Case School of Engineering traces its work in energy advancement to the 1930s, when it became an acclaimed leader in electrochemistry research for fuel cells. Since then, the school has broadened its interests to develop strengths in many other essential energy-related disciplines: advanced materials; wind energy, power informatics and control; energy conversion and storage; and solar.</p> <p>Building on this history and expertise in collaborative research, Case formed the Great Lakes Energy Institute as a resource for academia, industry, government and educators. Created with a \$3.6 million grant from The Cleveland Foundation, the Institute is a multi-disciplinary center that is led by researchers at the Case School of Engineering and utilizes the rich resources and expertise of all of the graduate and professional schools at Case Western Reserve University.</p> <p><b>Research Area and Projects:</b></p> <ul style="list-style-type: none"> <li>○ Energy Storage</li> <li>○ Wind Energy</li> <li>○ Fuel Cells</li> <li>○ Grid: Power Management and Electronics</li> <li>○ Solar Energy Materials</li> <li>○ Efficiency</li> <li>○ Carbon Capture and Clean Combustion</li> </ul>

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
<b>Mandel School of Applied Social Sciences (MSASS)</b>	<a href="http://msass.case.edu/research/centers.html">http://msass.case.edu/research/centers.html</a>	<p>The Mandel School has five centers, described below, that are organized to facilitate collaboration in research and training between faculty and community partners, including human service agencies, service delivery systems, and policy makers. Many initiatives are multidisciplinary and multi-institutional partnerships that address social problems, social-work practice, and social policy.</p> <p>There is a strong emphasis upon dissemination using cutting-edge knowledge to enhance practice and service delivery in the community. Centers provide opportunities for students to participate in all aspects of the research process.</p> <ul style="list-style-type: none"> <li>○ <a href="#">Center for Evidence-Based Practices</a></li> <li>○ <a href="#">Center on Interventions for Children and Families</a></li> <li>○ <a href="#">Center on Substance Abuse and Mental Illness</a></li> <li>○ <a href="#">Center on Urban Poverty and Community Development</a></li> <li>○ <a href="#">Dr. Semi J. &amp; Ruth Begun Center for Violence Prevention, Research and Education</a></li> </ul>

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
<p><b>Mandel Center for Nonprofit Organizations</b></p>	<p><a href="http://www.case.edu/mandelcenter/">http://www.case.edu/mandelcenter/</a></p> <p><b>Treu-Mart Youth Development Fellowship:</b> <a href="http://www.case.edu/mandelcenter/treu-mart/">http://www.case.edu/mandelcenter/treu-mart/</a></p> <p><b>Youth Philanthropy and Service (YPS):</b> <a href="http://www.case.edu/mandelcenter/yps/">http://www.case.edu/mandelcenter/yps/</a></p>	<p>The Mandel Center supports the mission of nonprofits through a blend of services and programs that nurture the development and prosperity of nonprofit organizations and their leadership.</p> <ul style="list-style-type: none"> <li>• <a href="#">Graduate Education</a> programs provide you with the management skills and knowledge to address a range of issues confronting nonprofits today. The Mandel Center offers a graduate degree or certificate in nonprofit management, one of the only programs in the world that offers this specialized degree. We also offer an Executive Option master's for established professionals and a dual degree or certificate with Case's Mandel School of Applied Social Science, the Weatherhead School of Management, and the School of Law.</li> <li>• <a href="#">Professional Development</a> programs provide nonprofit practitioners and Mandel Center alumni, as well as their organizations, with high quality learning opportunities and resources. These include three well-established and widely-respected programs: <ul style="list-style-type: none"> <li>• Leaders' Links, a peer learning program for Executive Directors/CEOs.</li> <li>• <b>Treu-Mart Youth Development Fellowship</b>, which provides support and training based on resiliency concepts for nonprofit professionals who work with youth during non-school hours.</li> <li>• <b>Youth Philanthropy and Service (YPS)</b>, which promotes leadership and personal involvement by youth in the giving of time, treasure, and talent to their community.</li> </ul> </li> <li>• <a href="#">Research</a> efforts are supported by faculty who are national leaders in the field of nonprofit management. This research is published in leading academic journals including the peer-reviewed journal, <a href="#">Nonprofit Management and Leadership</a>, founded in 1990 and administered by the Mandel Center. Nonprofit research projects and papers are also shared with students and the community through forums and lectures.</li> </ul>

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
<p><b>Center for Community Partnerships</b></p>	<p><a href="http://www.case.edu/community/">http://www.case.edu/community/</a></p>	<p>The Center for Community Partnerships contributes to Case Western Reserve University's goal of becoming the world's most powerful learning environment through the creation of mutually beneficial, academically focused partnerships--on and off campus--that will enhance the university and the community.</p> <p>This academically focused community engagement (ACCE) strategy aligns our core mission--the production of knowledge and the creation of a transformational educational experience for our students, with our desire to remain a significant community resource.</p> <p>ACCE supports the three vision areas of Institutional Culture and Values, Campus Environment, and Resources by:</p> <ul style="list-style-type: none"> <li>• Supporting new areas of emphasis, e.g., developing partnerships in Cleveland, empowering our faculty, staff, students and alumni to take a more active role in Greater Cleveland, promoting diversity through our community engagement efforts, and creating efficiency through the sharing of University resources among our community outreach programs, etc;</li> <li>• Forging new partnerships with University Circle institutions and participating in or assisting in the development of new programs in conjunction with Circle institutions; and</li> <li>• Drawing upon the Greater Cleveland community and its resources to enhance our curricular offerings, and promoting our community engagement efforts locally to enable greater access to our programs by the broader community.</li> </ul>

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
Center for Civic Engagement and Learning (CCEL)	<a href="http://studentaffairs.case.edu/civicengagement/">http://studentaffairs.case.edu/civicengagement/</a>	<p><b>Mission:</b> The mission of the Center for Civic Engagement &amp; Learning is to create an engaged campus by providing and supporting opportunities for community service and collective action while promoting civic awareness and leadership.</p> <p><b>CCEL's 2009 Events:</b></p> <ul style="list-style-type: none"> <li>○ <b>USNA 235 -- Exploring a Sense of Place: Doan Brook Watershed &amp; Photography</b> Having a sense of place, or a rooted understanding of where we live, shapes our identity, actions, and commitment to community. In this course, we will go beyond the “campus bubble” to explore the concept and development of a sense of place by studying and photographing the Doan Brook, our local watershed. Course readings, writing, and discussion will focus on Doan Brook natural history, local environmental issues, and sustainability. We will utilize photography as a primary tool for investigating and connecting to place as we undertake a photography project documenting the Doan Brook, which will be shared with the community. We will also consider our responsibility to place and learn about community-based initiatives in which people have committed to place and taken action to make a difference. Throughout the course, we will develop a stronger understanding of Case’s ecological address and the intersection of sense of place, environmental issues, and engagement with the watershed. We will explore firsthand where we are – and why it matters.</li> <li>○ <b>Saturday of Service Events:</b> The CWRU Center for Civic Engagement &amp; Learning (CCEL) coordinates a Saturday of Service each semester, which provide a chance for CWRU students to collectively contribute to the local community through a variety of projects located throughout the city. There were two 2009 spring and fall Saturdays and we had three eco projects. Two were working on landscaping, planting, mulching at Cleveland Botanical Gardens, one was removing invasive species at a camp in Chardon. We also had students working on clean-up and restoration projects as part of the spring 2009 Alternative Spring Break trip at City Park New Orleans. Other than those projects, the vast majority of CCEL’s 2009 activities/events focused on human services organizations (homelessness, hunger, poverty, literacy tutoring, etc.).</li> </ul>

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
<p><b>Center for Global Health and Diseases</b></p>	<p><a href="http://www.case.edu/orgs/cghd/Home.htm">http://www.case.edu/orgs/cghd/Home.htm</a></p>	<p>The Center provides a coordinating structure to help link the numerous international health resources of the University, its affiliated institutions, and the Northern Ohio community in a multidisciplinary program of research, training and clinical application related to global health.</p> <p>The Center brings together many disciplines at CWRU to make life better in developing countries, and thus functions as a catalyst to stimulating international collaborations throughout the institution.</p> <p><b>International Partnerships:</b> The Center maintains dynamic and long-lived research collaborations with foreign scientists in Kenya (KEMRI), Papua New Guinea (PNGIMR) , Cote D'Ivoire, Uganda, and Brazil. These partnerships have productively supported field-based studies of malaria, schistosomiasis and filariasis for up to thirty years and have richly contributed to the recruitment, education and professional growth of foreign scientists from these host countries, significantly expanding their research capabilities.</p> <p><b>Domestic partnerships:</b> The Center actively collaborates with other research programs at CWRU that have collectively made this campus famous for its international health research efforts. These include the <a href="#">CWRU Framework Program for Global Health</a>, the <a href="#">Tuberculosis Research Unit (TBRU)</a>, the <a href="#">Center for AIDS Research (CFAR)</a> , the <a href="#">Division of Infectious Diseases</a>, the <a href="#">Department of Epidemiology and Biostatistics</a> and the <a href="#">Department of Anthropology</a>.</p>

<b>CENTERS/PROGRAMS/ INSTITUTES</b>	<b>WEBSITE(S)</b>	<b>BRIEF DESCRIPTION</b>
<p><b>Center for Science, Health and Society</b></p>	<p><a href="http://casemed.case.edu/cshs/">http://casemed.case.edu/cshs/</a></p>	<p>Recognizing that the successful futures of Case Western Reserve University, the City of Cleveland, and the County of Cuyahoga are integrally related, the Center for Science, Health and Society (CSHS) was created in 2002 to focus the efforts of the University and the city in a significant new collaboration to impact the areas of health and healthcare delivery systems through community outreach, education, and health policy.</p> <p>The Center, based in the School of Medicine, with university wide associations is engaging the many strengths of the University and the community to:</p> <ol style="list-style-type: none"> <li>1. Improve the health of the community</li> <li>2. Educate and empower the community to become better consumers of healthcare and more informed and stronger advocates for healthcare policy and legislation in their own interests</li> <li>3. Encourage members of the community enter careers in the biomedical workforce and healthcare professions</li> </ol> <p>The Center has engaged the community at the level of the individual and the neighborhood, in public and private schools, at civic and faith-based organizations, and at the level of governmental agencies and community leadership to identify community problems, perceptions, assets and resources; advise the community of faculty skills, assets and expertise; and, catalyze that community service based scholarship that benefits community interests and promotes mutual enhancement.</p>

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
Center for Social Justice	<a href="http://law.case.edu/AcademicCenters/SocialJustice.aspx">http://law.case.edu/AcademicCenters/SocialJustice.aspx</a>	<p>The Center for Social Justice is the Law School’s newest Center, but it has a long legacy. Case Western Reserve School of Law has a remarkable history of commitment to social justice - some of the nation’s most courageous and influential civil right attorneys have been graduates of the school. The Center for Social Justice honors our illustrious alumni by seeking to carry on their work through a variety of academic and community-oriented programs. But the Center does not just look back – our aim is to shape the future by promoting public service and encouraging students to do public interest work after they graduate.</p> <p><u>Community Outreach:</u></p> <ul style="list-style-type: none"> <li>• Research collaboration on aspects of the foreclosure crisis, particularly in Cuyahoga County, with CWRU’s Mandel School of Applied Social Sciences Center on Urban Poverty and Community Economic Development.</li> <li>• Participation in the Housing and Community Development Roundtable, a collaboration among Cleveland area academic centers and practitioners interested in housing issues.</li> <li>• Organizing and facilitating pro bono opportunities for law students to work with the Cleveland Legal Aid Society, the Cuyahoga County Witness/Victim Center, the Ohio Benefits Bank, and the Council on American-Islamic Relations, among others.</li> <li>• Involvement with the Law &amp; Leadership Program, a program started by the Ohio Supreme Court to help promising youth from disadvantaged neighborhoods to compete at high academic levels and prepare them to be future leaders in the legal profession.</li> <li>• Helping with the Stephanie Tubbs-Jones Summer Legal Academy, which gives minority high school students an intensive two-week summer program designed to excite them about the possibility of pursuing a legal career.</li> <li>• Forming a student arm of the Center – Law Students for Social Justice – to help mobilize students to engage in pro bono and community service activities.</li> <li>• Convening a student advisory panel to the Center to help facilitate and coordinate social justice and community service activities initiated by various independent student groups.</li> </ul>

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
<p><b>Inamori International Center for Ethics and Excellence</b></p>	<p><a href="http://case.edu/provost/inamori/">http://case.edu/provost/inamori/</a></p>	<p>The purpose of the Inamori Center is to foster ethical leadership around the world. The Inamori Center fulfills its purpose by awarding the annual <a href="#">Inamori Ethics Prize</a>; collaborating with people and entities at Case Western Reserve University, in the regional community, and around the United States and the world; and sponsoring ethics research, scholarship, symposia, lectures, and other means of ethical discourse. As a beginning to influencing ethical leadership around the world, we seek to create a strong understanding of ethics, ethical thinking, and ethical behavior for all students, staff, and faculty at Case.</p> <p>The Inamori International Center for Ethics and Excellence began in July 2006 as the result of a generous gift from <a href="#">Kazuo Inamori</a> and the <a href="#">Inamori Foundation</a> of Kyoto, Japan. Dr. Inamori, founder of the Kyocera Corporation, believes that “people have no higher calling than to serve the greater good of humankind and society” and “the future of humanity can be assured only through the balance of scientific progress and spiritual maturity.” The Inamori Center will foster the development of future leaders who will, in the words of Kazuo Inamori, <i>“Serve humankind through ethical deeds rather than actions based on self-interest and selfish desires.”</i></p> <p>The Inamori International Center is dedicated to exploring ethical issues from a global perspective, to nurturing international awareness and understanding of our common humanity through the study, teaching, and practice of ethics, and to the pursuit of excellence in all human endeavors. As a university-wide organization, the Inamori Center will work in concert with existing university ethics-related programs as well as with others from the national and international communities.</p>

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
<b>World Health Organization Collaborating Center for Research</b>	<a href="http://fpb.case.edu/Centers/WHOCC/">http://fpb.case.edu/Centers/WHOCC/</a>	An institution designated by the director-general of the United Nations to form part of an international collaborative network carrying out activities in support of the World Health Organization program at all levels. The global network is geared to nursing development (education, practice, research and leadership) for primary health care.

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
<b>Community Dentistry</b>	<a href="http://dental.case.edu/community/">http://dental.case.edu/community/</a>	<p>The Department of Community Dentistry has several programs which involve health services, education and research and are a resource for graduate students studying dental care systems. These programs have as their goal the protection and improvement of the oral health of individual patients and of the community at large. Faculty members of the department have research programs of their own and teach and serve on committees of graduate students from various departments of the University (Community Health Nursing, Epidemiology, Nutrition).</p> <p>The Department of Community Dentistry also has underway an ongoing program involving all four years of dental students in the placement of dental sealants on all 2nd, 3rd and 6th graders permanent molar teeth who attend the City of Cleveland Public Schools. This program involves referrals to dentists for additional care, education of teachers, public school students, parents, and dental students. The program is supported (\$600,000 annually) by the St. Luke's Foundation of Cleveland, and the educational component is supported by the Robert Wood Johnson Foundation (\$500,000 over four years) and the Cleveland Foundation. During the 2008-2009 school year, the Sealant Program visited 86 schools and treated over 6,200 children with 18,000 sealants.</p>

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
<p><b>University Farm and Bon Appetit Food Services Provider</b></p>	<p><a href="http://studentaffairs.case.edu/farm/conservation/farmfood.html">http://studentaffairs.case.edu/farm/conservation/farmfood.html</a></p>	<p><b><i>Growing Local Food for Our Campus Dining</i></b>  Since October 2009, the Case Western Reserve University Farm administration, <a href="#">Bon Appétit</a>, and SAGES faculty have been meeting to discuss a new initiative to grow food at the University Farm to supply locally grown and fresh vegetables to the campus dining rooms. The goals of this initiative are to provide new educational opportunities to faculty and students, study local food production in a sustainable way using mostly organic methods, and deliver fresh food and herbs to the campus — and eventually to the area surrounding the farm.</p> <p>Since October 2009, the Case Western Reserve University Farm administration, <a href="#">Bon Appétit</a>, and SAGES faculty have been meeting to discuss a new initiative to grow food at the University Farm to supply locally grown and fresh vegetables to the campus dining rooms. The goals of this initiative are to provide new educational opportunities to faculty and students, study local food production in a sustainable way using mostly organic methods, and deliver fresh food and herbs to the campus — and eventually to the area surrounding the farm.</p> <p><b>The Proposal and Pilot Project</b>  For over five months, Chris Bond has been working on the design of a pilot project to start food production in February, 2010. Based on his research, the Farm Administration submitted a proposal to Bon Appétit in January and obtained a \$2,000 gift to help with the initial costs associated with starting and implementing this program. The gift will help cover the acquisition of materials such as growing media, containers, appropriate fertilizers, seeds, and plants. Other costs will be borne by the farm administration, including the labor costs, heating, cooling, maintenance, water, and other equipment. Spring and summer help will include farm staff, local high school students, and students involved with Case SURES (Summer Undergraduate Research in Energy Studies).  To support local establishments wherever possible, supplies were obtained from local vendors such as Ivy Garth Seeds in Chesterland, Chagrin Valley Nurseries in Gates Mills, and Waldo and Associates in Perrysburg. Many of the materials supplied by these local vendors are also manufactured in the area. For example, the plastics for the growing containers are made in Middlefield and Akron.</p>

CENTERS/PROGRAMS/ INSTITUTES	WEBSITE(S)	BRIEF DESCRIPTION
		<p><b>Effective Pest Control</b>  To achieve effective pest control in the greenhouse and attempt to eliminate the use of pesticides on food crops, biological remedies are being tried for the first time in the greenhouse. Pests such as whitefly and fungus gnats are constant nuisances in a greenhouse environment. In February, beneficial predators such as the <i>Delphastus catalinae</i> beetle were used to consume whitefly, and the <i>Atheta coriaria</i> beetle will be used to consume fungus gnats. In addition, beneficial nematodes will be released in the soils to consume fungus gnat larvae so that effective control can be achieved without the use of harmful chemicals. Starting in March and weekly thereafter through April, the <i>Encarsia formosa</i> wasp will be released to aid in the fight against the whitefly populations. This is just one more example of how the University Farm is engaging in the practice of sustainable agriculture through environmentally friendly means.</p> <p><b>Biocontrol at the Farm Greenhouse</b>  For the 2010 growing season, both indoor and outdoor space will be used to grow vegetables. The outdoor growing area will include 2,400 square feet at the Squire Valleevue farm Community Gardens and an area at Valley Ridge farm that is still to be determined. The indoor space at the <a href="#">Debra Ann November Research Greenhouse</a> will be approximately 700 square feet. The greenhouse space is expected to increase over time as space becomes available. Multiple, successive crops of the same types can be produced during the same year in many cases by producing whatever can be grown in the greenhouse during colder months.</p> <p><b>Vegetable Plants at the Debra Ann November Research Greenhouse</b>  The estimated 2010 food production is expected to yield more than 2,000 pounds of fresh vegetable products, including:</p> <ul style="list-style-type: none"> <li>• tomatoes and peppers for a combined yield of up to 800 lbs.</li> <li>• all types of greens to yield up to 500 lbs.</li> <li>• all types of herbs to yield up to 150 lbs.</li> <li>• zucchini, squash and pumpkin to yield up to 300 lbs.</li> <li>• all other types of vegetables such as cruciferous vegetables to yield up to 500 lbs.</li> </ul>

ASSOCIATIONS/ CHAPTERS/CLUBS	WEBSITE(S)	BRIEF DESCRIPTION
<p><b>Net Impact CWRU Chapter</b></p>	<p><a href="http://www.netimpact.org/">http://www.netimpact.org/</a></p> <p>CWRU Chapter:  <a href="https://sites.google.com/a/case.edu/net-impact-club/">https://sites.google.com/a/case.edu/net-impact-club/</a></p>	<p>Net Impact is a global network of leaders who are changing the world through business. Spanning six continents, our membership makes up one of the most innovative and influential networks of MBAs, graduate students, and professionals in existence today. Our members believe that business can both earn a profit and create positive social change.</p> <p><b>Net Impact's Mission:</b>  Is to make a positive impact on society by growing and strengthening a community of new leaders who use the power of business to make a positive net <b>social, environmental, and economic impact.</b></p> <p><b>Net Impact CWRU 2009 Chapter Events:</b></p> <ul style="list-style-type: none"> <li>○ Speaker Series by sustainability experts: Year-round.</li> <li>○ Great Lakes Brewery Tour: A fully sustainable business right here in Cleveland.</li> <li>○ Sustainable Tailgate: We had a food drive for the Cleveland Food Bank as an entry fee, and had the food for the event donated from Bon Appetit using only local food, and beer donated from Great Lakes which is local and sustainable operations.</li> <li>○ Net Impact National Conference 2009: 10 Chapter members participated</li> </ul>

ASSOCIATIONS/ CHAPTERS/CLUBS	WEBSITE(S)	BRIEF DESCRIPTION
<p><b>Student Sustainability Council</b></p>	<p><a href="http://www.case.edu/sustainability/council.html">http://www.case.edu/sustainability/council.html</a></p>	<p>The Student Sustainability Council is centrally committed to promoting and developing a more sustainable mode of life for students and faculty on Case Western Reserve University's campus. It aims to create and implement innovative projects dealing with recycling, water conservation, 'green' building policies, food waste reduction, and many other topics, work with faculty, staff, administration, and other student organizations to review, design, and implement new policies, practices, and procedures in order to accomplish a more sustainable lifestyle.</p> <p>SSC provides a mechanism to facilitate the process of student involvement in making the dream of a carbon neutral institution a reality.</p>

ASSOCIATIONS/ CHAPTERS/CLUBS	WEBSITE(S)	BRIEF DESCRIPTION
<p><b>CASE Outing Club</b></p>	<p><a href="http://www.case.edu/studentorgs/">http://www.case.edu/studentorgs/</a></p>	<p>"The Case Reserve Outing Club is a club for students to find affordable outdoor trips ranging from camping, canoeing, backpacking, hiking, tobogganing. We are always open to suggestions and always looking for new ideas for trips."</p>

ASSOCIATIONS/ CHAPTERS/CLUBS	WEBSITE(S)	BRIEF DESCRIPTION
<p><b>Engineers Without Borders (EWB)</b></p>	<p><a href="http://ewb.case.edu/">http://ewb.case.edu/</a></p>	<p>EWB-Case, founded in 2003, is part of a greater worldwide movement that is committed to the pursuit of community-based development through the design and implementation of sustainable engineering projects. Our dream is to help create a world where every human being is able to meet their basic needs. We work towards this goal by partnering with communities around the world and pursuing projects desired and needed by our partner communities. In general, EWB groups will work on water, sanitation, cook stoves, and irrigation. However we also work to help our partner communities pursue other goals more geared towards specific economic and social development.</p> <p><b>The EWB chapter at Case Western Reserve University is currently engaged in three international projects, as well as several local projects and research into methods of water treatment.</b> Our current international projects are in the Dominican Republic, Thailand and Cameroon. These project are currently focused on providing accessible, clean, and safe drinking water in our partner communities, as well as working to provide for basic sanitation needs. Our local projects are focused on sustainability, engineering education and testing technologies for use in our international projects.</p> <p>Our group is a diverse collection of students and professionals, from many disciplines outside of what is traditionally considered engineering, but also with a solid grounding in traditional engineering disciplines. We welcome students and professionals of all kinds. Our work is sponsored and strongly supported by the Case School of Engineering, Case Alumni Association and Rotary International.</p>

ASSOCIATIONS/ CHAPTERS/CLUBS	WEBSITE(S)	BRIEF DESCRIPTION
CASE Cares	<a href="http://casecares.blogspot.com/">http://casecares.blogspot.com/</a>	<p>The Case Animal Rights and Ethics Society (CARES) is a student organization interested in improving the lives of animals on campus, in the community, and nationally.</p> <p>Description: The Case Animal Rights &amp; Ethics Society (CARES) is a student run animal rights organization at Case Western. CARES believes that every individual, whether human or animal, has a right to live life free from unnecessary pain and suffering. CARES promotes a lifestyle free from exploitation of others. Through education, outreach and volunteer work, CARES works toward a more compassionate world.</p> <p>This organization was founded with three goals in mind:</p> <ol style="list-style-type: none"> <li>1. Spread Awareness (Semester Speaker, posters)</li> <li>2. Volunteer (at the Cleveland APL shelter)</li> <li>3. Work towards a more Animal Friendly Case (push to reform the Case campus pet ban, make classroom dissection optional, improve vegetarian/vegan dining options, etc)</li> </ol>

ASSOCIATIONS/ CHAPTERS/CLUBS	WEBSITE(S)	BRIEF DESCRIPTION
Environmental Law Society	<a href="http://law.case.edu/StudentLife/StudentOrganizations/StudentOrganizationsDetailsContent/tabid/207/Default.aspx?orgId=7">http://law.case.edu/StudentLife/StudentOrganizations/StudentOrganizationsDetailsContent/tabid/207/Default.aspx?orgId=7</a>	<p>The aim of the Environmental Law Society (ELS) is to educate its members and the student body on environmental law issues. The organization welcomes varying viewpoints on the subject matter. ELS strives to participate in environmental protection projects, and the organization also serves as a social outlet for its members. Activities include: inviting professionals, attorneys, professors, and community leaders to speak on environmental topics, touring the Cleveland Botanical Gardens, actively maintaining a bulletin board in Blackacre with timely ELS information and news articles, and working with the university and neighboring communities on a variety of environmentally related issues and projects.</p>

## APPENDIX: COURSES INFORMATION

### **Environmental or Sustainability Related Majors:**

- (i) ENVIRONMENTAL STUDIES Undergraduate Major
- (ii) Ph.D in ECOLOGY

### **List of Environmental and/or Sustainability classes to make such courses easy to identify:**

- (i) Institute of Sustainability's Link to Education:  
<http://www.case.edu/sustainability/education.html>
- (ii) Environmental Studies Major Link to General Bulletin 2009-2010:  
[http://www.case.edu/bulletin/09-11/artsandsciences\\_environmental\\_studies.htm](http://www.case.edu/bulletin/09-11/artsandsciences_environmental_studies.htm)
- (iii) All courses offered in Environmental Studies Major are emailed as an excel sheet to CWRU student groups in advance.
- (iv) Master of Science in Social Administration (Mandel School of Applied Social Sciences):  
[http://www.case.edu/bulletin/09-11/msas\\_course\\_descriptions.htm](http://www.case.edu/bulletin/09-11/msas_course_descriptions.htm)
- (v) Weatherhead School of Management Graduate Programs:  
[http://www.case.edu/bulletin/09-11/weatherhead\\_graduate\\_programs.htm](http://www.case.edu/bulletin/09-11/weatherhead_graduate_programs.htm)

### **Environmental-Themed class a core curriculum requirement:**

At CWRU "core curriculum" is limited to a small handful of general University "Seminar" style courses called "SAGES" courses. All undergraduates must take a SAGES course covering each of the 3 categories which comprise the program, one of which is the natural world / environment.

Beyond this, core curriculum is based on the chosen major of each student. **Several majors include environmental or sustainability related courses as part of their core curriculum**, such as biology, management, environmental studies, materials science, or geology.

**Environmental and/or Sustainability classes offered at the different schools and colleges at CWRU.**

**Note: this includes the classes that contain topics on clean technologies, including topics such as energy efficiency and solar-wind energy engineering:**

**ENVIRONMENTAL STUDIES MAJOR – COURSE OFFERINGS:**

**(Preliminary Fall 2009 Listing)**

	(Bold font indicates required course or distributional requirement)	
<i>(underline = course of interest not often offered)</i>		
<b>COURSE</b>	<b>TITLE</b>	<b>INSTRUCTOR</b>
ANTH 102	Being Human : Intro to social&cultural anthropology	Katia Almeida
ANTH 103	Introduction to Human Evolution.	Adriann Balok
ANTH 103	Introduction to Human Evolution.	Cynthia Beall
ANTH 107	Archeology: An Introduction	Jim Shaffer
ANTH 202	Archeology Eastern N.America	Brian Redmond
ANTGH 302	Darwinian Medicine	Cynthia Beall
ANTH 375	Human Evolution: The Fossil Evidence	J. Haile-Selassie
BIOL 114	Princliplies of Biology (non-majors)	staff
BIOL 223	Vertebrate Biology	Drushel
BIOL 225	Evolution	staff
	XLIST: GEOL 225/PHIL 225/ ANTH225/ HSTY 225	
BIOL 251	Intro to Organismal and Population Systems	Koonce
BIOL 306	Dynamics of Biological Systems, II Math Biol	Snyder
<i>BIOL 318</i>	<i>Entomology</i>	<i>Mark Willis</i>
BIOL 326	Genetics	Rozek
BIOL 336	Aquatic Biology	James Bader
BIOL 339	Aquatic Biology Lab	Bader
<b>BIOL 351</b>	<b>Principles of Ecology</b>	<b>Drewa</b>
	Lab	
BIOL 362	Principles of Developmental Biology	Liang
BIOL 366	Genes, Embryos & Fossils	Atit
ECON 102	Principles of Microeconomics	seven sections
ECON 367	Energy Economics and Engr Solutions	Gary Murphy
<b>ECON 368</b>	<b>Environmental Economics</b>	<b>Susan Helper</b>
ECON 375	Developing Countries	Silvia Prina

<b>EECS 342</b>	<b>Introduction to Global Issues</b>	<b>Mihaljo Mesarovic</b>
EECS 435	Data Mining	Jiong Yang
<b>ESTD 398</b>	<b>Seminar in Environmental Studies</b>	<b>Peter McCall</b>
GEOL 110	Physical Geology	Ralph Harvey
GEOL 119	Geology Laboratory	Steve Hauck
<i>GEOL 305</i>	<i>Geomorphology and Remote Sensing</i>	Peter Whiting
GEOL 321	Hydrogeology	Gerald Matisoff
HSTY 250	Issues and Methods In History	Ken Ledford
HSTY 342	Water (XListed as POSC 342)	John Broich
<i>HSTY 346</i>	<i>Guns, Germs, Steel</i>	<i>John Broich</i>
HSTY 391	Food in History	Alan Rocke
HSTY 452	History of American Technology	Peter Shulman
PHIL 304	Science, Engineering Ethics	staff
PHIL 333	Philosophy of Religion	Jerry Piven
PHIL 335	Philosophy of Law	Joel Levin
RLGN 102	Intro Study of Religion	Joy Bostic
RLGN 209	Intro to Biblical Literature	Tim Beal
RLGN 217	Buddhism	William Deal
SOCI 113	Critical Problems in Society	David Warner
SOCI 377	Population Dynamics & Changing Societies	David Warner
-	-	-
STAT 201,312	Statistics for Life Sci or Sci/Engr	multiple sections
STAT 325	Data Analysis and Linear Models	Jiayang Sun
USNA 220	Suburban Landscapes: Nature, Technology, Culture	Erika Olbricht
USNA 235	Exploring a Sense of Place	Elizabeth Banks
USNA 237	Landscape History & Conservation	Erika Olbricht
USNA 241	Urban Transportation	Isaac Greber
<i>USNA 243</i>	<i>CWRU's Carbon Footprint</i>	<i>Linda Robson</i>
USSY 241	Birth of the Modern:1902-25	Daniel Melnick

	The following engineering courses are good electives but may come with pre-requisites; check with instructors	
ECIV 160	Surveying and Computer Graphics	Dario Gasparini
ECIV 361	Water Resources Engineering	Aaron Jennings
ECIV 433	Soil Dynamics	X. Zeng
EECS 435	Data Mining	Jiong Yang
	Transport Phenomena for Chemical Systems (+other sections)	
ECHE 360	Thermodynamics, Fluid Dynamics, Heat and Mass Transfer	Donald Feke various times , instructors
ENGR 225	Transfer	
EMAE 325	Fluid and Thermal Engineering II	Joe Prah

EMAC 270	Introduction to Polymer Science and Engineering	Hatsuo Ishida
EMSE 201	Intro Materials Science	Mark DeGuire
	The following are Medical school courses that may be open to you—contact instructor	
EPBI 431	Statistical Methods (also BIOL 431- how to use stat pkgs)	Stephen Ganocy
EPBI 484	Geographic medicine & Epidemiology	Daniel Tisch
MPHP 429	Introduction to Environmental Health	Dorr Dearborn

### Other Relevant ‘SAGES’ Courses:

- **USNA 250 - Assessing Climate Change and Wind Energy** (Fall '09 - David Matthiesen)
- **USNA 245 - The Impact of Technology on Society** (Si Ostrach)
- **USNA 216 Fuel Cells – Reality, Prospects and Myth.** (Landau & Savinell)
- **USNA 235 -- Exploring a Sense of Place: Doan Brook Watershed & Photography**  
 Having a sense of place, or a rooted understanding of where we live, shapes our identity, actions, and commitment to community. In this course, we will go beyond the “campus bubble” to explore the concept and development of a sense of place by studying and photographing the Doan Brook, our local watershed. Course readings, writing, and discussion will focus on Doan Brook natural history, local environmental issues, and sustainability. We will utilize photography as a primary tool for investigating and connecting to place as we undertake a photography project documenting the Doan Brook, which will be shared with the community. We will also consider our responsibility to place and learn about community-based initiatives in which people have committed to place and taken action to make a difference. Throughout the course, we will develop a stronger understanding of Case’s ecological address and the intersection of sense of place, environmental issues, and engagement with the watershed. We will explore firsthand where we are – and why it matters.

### Other Environmental Studies Major Courses:

- ESTD 101 and 398
- RLGN 206 or HSTY 378
- ECON 368 or GEOL 303
- BIOL 350 or EECS 342 or GEOL 202

## Relevant Engineering and Sciences Courses:

- **EMSE 201** in fall 2009 for the first time included a lecture on the concept of embodied energy in engineering materials; how it includes the basic thermodynamic energy needed to convert a raw material into a usable engineering material, but also the energy of transportation of raw material to the plant and engineered material from the plant, and the inherent energy inefficiency of manufacturing processes. The course included a homework assignment on embodied energies of a wide range of engineering materials, combined with the annual world production of these materials, to convey a sense of how much energy is consumed in providing the materials the world uses each year. The lecture and assignment utilized the CES EduPack software package.
- **ENGR 145** has for several years included at least one lecture per year on recycling of materials: the energy costs and benefits, the physical properties that enable some materials to be recycled more readily than others, and the changes in materials properties that occur when a material is recycled. Three other lectures on thermodynamics include discussions of the energy of processing material vs. the energy of recycling materials. In spring 2009 these lectures and homework assignments utilized the CES EduPack software package.
- **ECHE 381: Electrochemical Technology** (Tom Zawodzinski & Uzi Landau)
- **ECHE 4XX: Graduate reading seminar course on electrochemical engineering** this past semester which involved Uzi (Landau), Tom (Zawodzinski) and [Bob Savinell].
- **EECS 342: Global Issues** (Sreenath/Mesarovic)
- **Energy & Society** (Phil Taylor)
- **EMAC 413 (Fall'09): Green Chemistry & Engr** (LaShanda Korley)
- **EMSE 335/435 - Strategic Metals and Materials for the 21st Century (with one of the themes being sustainability of materials resources)** (Fall '09) (James McGuffin-Cawley)

## **SURES: Summer Undergraduate Research in Energy & Sustainability May 25 – July 31st, 2009**

### **Background**

CWRU is a multi-disciplinary research intensive university with key faculty participating in leading energy related research programs. Energy has been targeted as one of the key strategic and academic thrusts of our university to include the Great Lakes Advanced Energy Institute. SURES is an educational and professional development program exposing students to cutting-edge research in energy related topics and introducing them to industrial partners engaged in energy related issues of concern for regional and global industries. The SURES program engages students, staff, faculty, and community members in discussion and debate of energy issues, as well as provide students exposure to technological and policy driven solutions. Students participating in this program are better prepared to enter industry and make a material impact early in their careers.

### **Acknowledgement**

The SOURCE office and the SURES program directors recognize and are grateful to the Provost, Case Alumni Association (CAA), and the Dominion Foundation for their support of the SURES program.

### **Goals and Objectives**

The Summer Undergraduate Research in Energy Studies (SURES) will expose students to basic concepts in energy research, as related to their discipline. Additionally students will learn about the broad area of energy research and attendant societal issues. Finally, students will be exposed to topics central to their professional development as future scientists, social scientists, and engineers. In summary the overall objectives of the program are:

- Expose students to fundamental concepts in energy such as renewable energy sources, energy, policy, and economics.
- Involve students in the research process
- Educate students in the broad area of energy research
- Train students in topics important to their professional development, including:

- Laboratory Safety and Handling
- Record keeping and intellectual property
- Presentation and Written Skills
- Economic Policy Development
- Team Building
- Ethics

### **Eligibility**

All undergraduate students at Case Western Reserve University who are continuing as undergraduates at Case in Fall 2010 are eligible to apply to the SURES program. Award recipients must be registered for fall classes prior to beginning the summer project. Projects must be completed at Case, and/or be under the supervision of a Case faculty member. Students who are awarded full research stipends (\$3,500) cannot enroll in more than 4 hours of summer course work. While students may apply for funding for different projects, students may not accept funding for 2 different projects (that is, students may not be part of both the SPUR and SURES programs). If you are accepted into more than one project program, you must choose in which project you want to participate.

### **The SURES Program**

The 2010 Summer Undergraduate Research in Energy Studies (SURES) program is a ten week program beginning May 24 and continues through July 30, 2010. Each SURES participant will be paid a \$3,500 stipend. During the ten week program, students will work closely with their research mentors on their proposed projects. In addition, participants are required to participate in the weekly seminar series.

### **Sample Research Areas**

Below are two examples of past projects:

*Computer Modeling of Proton-Conducting Membranes, Faculty Mentor Philip Taylor, Physics*

Undergraduates with some experience in computing have been very successful in my research program, which is aimed at elucidating the nature of proton transport in ionomer membranes by means of a combination of analytical theory and molecular modeling. There are two broad thrusts. The first of these is directed towards understanding the equilibrium structure of Nafion, which is a typical membrane material. The second thrust is concerned with the transport of protons through a membrane of this type. The research on structure will proceed by building on existing work, but with the introduction of some novel techniques, among which is a hybrid Molecular Dynamics--Monte Carlo approach. This method permits rapid computations by temporarily decoupling the motion of the hydrophilic polar side chains from that of the hydrophobic backbone. The work on transport of protons in Nafion-like membranes will also involve a combination of theory and simulation. Atomistic molecular-dynamics simulations will be employed to determine some of the characteristic parameters for the diffusion of protons in hydrated membranes. These results will be used in a theoretical model of non-linear diffusion to predict transport coefficients.

The goal of the research will be the development of new theoretical tools whereby the use of atomistic simulations that are run for modest lengths of time can lead to realistic and useful predictions. The search for new and more effective membranes for efficient fuel cells may receive some useful assistance from the development of these new theoretical tools.

*Energy Efficiency and Conservation Studies, Faculty Mentor David Schwam, Materials Science and Engineering*  
Metal Casting is one of the most energy intensive industries. Large amounts of heat are required for melting, transferring and holding metal. The efficiency of these processes has a direct impact on the profitability of the operation. In addition, metal casters use compressors, motors, fans, lighting and other auxiliary equipment that consumes energy. The Case Metal Processing Laboratory is conducting industrial energy studies with undergraduate and graduate students' participation. Projects include benchmarking of energy use in electrical and gas equipment, evaluation of new technologies, design and implementation of engineering modifications to improve energy efficiency. The projects include off site visits of industrial operations.

### **Weekly Seminar Series**

The weekly seminar series will be divided into two components (1) SURES weekly Thursday seminar (a) featuring industry and faculty guest speakers and (b) student presentations about their work ; (2) SOURCE Tuesday Lunch & Learn Seminars (general education seminars). SURES participants are required to attend all of the SURES weekly seminars. SURES participants are required to attend 4 of 8 of the SOURCE Tuesday Lunch & Learn Series.

#### **1a) Faculty and Industry Speakers**

Previous summers' speaker series were a great success attracting faculty and graduate students as well as undergraduate students. Past schedules are included in the appendix. This year's schedule will be at least as inviting.

#### **1b) Student Presentations**

Students will be expected to present about their research projects and their most recent results. The purpose of these presentations is three-fold: to teach the students ways to organize the results and present it to their peers in a concise manner, to expose students to different areas of energy research, and to improve their presentation and communication skills.

#### **2) SOURCE Tuesday Lunch & Learn Seminars**

Finally, the SOURCE office provides general educational seminars to all summer research students throughout the summer. Topics include:

- Utilizing Research Databases
- Ethics and research
- Graduate School Application Process
- How to Develop and Present a Poster

## **Relevant Weatherhead School of Management courses:**

### Undergraduate Management Courses:

- Energy Economics and Engr Solutions
- Environmental Economics

### MBA Courses:

- Institute in Sustainable Value
- Practicum in Sustainable Value
- Sustainable Operations (Independent Study)
- Human Values in Organization
- Business Ethics
- Fraud, Governance & Reporting
- Health Economics and Strategy
- Intro to the Nonprofit Sector
- Nonprft Ethics/Professionalism

### Master of Science in Positive Organization Development and Change (MPOD) courses:

- **Residency One**  
Joining the Global Inquiry (BAWB)
- **Residency Three**  
Individual Field Projects; Sustainability for Competitive Advantage;
- **Residency Four**  
Building the Sustainable Enterprise Practicum

## **Relevant School of Nursing course curriculum:**

- Pediatric curriculum: information about chemicals (such as mercury and lead) and air quality that impact child health.
- In the community/public health classes take by all undergraduate students, environmental issues are addressed.
- All graduate(Masters and Doctorate in nursing practice) sutdents take a health promotion class. Smoking cessation is one fo the otpics addressed.
- All graduate (Graduate, Doctorate in Nursing parctice and PhD) students take health policy class that address environmental health policy issues.
- All undergrads have to take an assessment class and so need to address envrioenmental stressors when collecting assessment data.

## **Master of Science in Social Administration (Mandel School of Applied Social Sciences):**

- **Several related courses:**

[http://www.case.edu/bulletin/09-11/msas\\_course\\_descriptions.htm](http://www.case.edu/bulletin/09-11/msas_course_descriptions.htm)

### **Relevant School of Law courses:**

#### **LAWS 331. Environmental Law (3)**

The course is designed to provide an overview of both the breadth and depth of environmental regulation in the United States and to consider ways our environmental regulatory system might be improved. Although all of the major environmental laws will be surveyed, several statutes will be examined in greater detail. Students will be expected to navigate select provisions of statutes and regulations through in-class problem sets. Guest speakers will also be invited to speak on topics of current interest.

#### **LAWS 013. Current Controversies in Environmental Law (3)**

This seminar will explore current legal and policy controversies in environmental law. Special attention will be paid to recent Supreme Court decisions and forthcoming environmental protection, federal courts, including current constitutional challenges to environmental programs and regulations. Issues likely to be discussed include the impact of recent federalism decisions on environmental protection, federal preemption of state regulation, environmental standing, the non-delegation doctrine, and cost-benefit analysis, among other topics. Students will read recent Supreme Court and Circuit court opinions, appellate briefs, academic commentary and supporting materials. Grade is based on class participation, final presentation, and a paper. Limited to 12.

#### **LAWS 029. Health Care and Human Rights (3)**

This course combines two areas of law of increasing importance and public attention. In light of emerging medical, research, and genetic technology, courts, legislatures, administrative agencies and ordinary citizens around the world often face issues of health law. At the same time, in a world that is becoming both globalized and plagued by repeated instances of ethnic cleansing and other catastrophic abuses, issues of human rights are at the forefront of public debate. The intersection of health care and human rights, therefore, constitutes a worthy and fascinating area of study. Topics to be covered will be selected from among the following: 1) an overview of relevant human rights doctrines; 2) the concept of public health; 3) the status of the right to health care in different countries; 4) biomedical research involving human subjects; 5) genetic technologies; 6) disability rights; 7) women's reproductive and health issues; 8) **environmental abuses and human rights**; 9) infectious disease, bioterrorism, and human rights; and 10) war crimes and other human rights abuses, as they impact public health.

**LAWS 064. International Environmental Law (3)**

This course examines selected issues and current problems in international environmental law, with a particular focus on transboundary environmental problems, global “commons,” and the development, implementation and enforcement of international environmental agreements. Requirements for the class will include several short writing assignments and weekly simulations and role-play exercises. There will be no final exam. Limited enrollment of 20 students.

## APPENDIX: PROFESSORS ACCOMPLISHMENTS

1) *Partial* List of CWRU Faculty Involved with Environmental / Sustainability Teaching, Research, and Publications (represents a variety of schools and colleges):

### CWRU Schools and Colleges Legend:

CSE: Case School of Engineering

A&S: Arts and Science

WSOM: Weatherhead School of Management

Med: School of Medicine

MSASS: Mandel School of Applied Social Sciences

Law: School of Law

Nur: Frances Payne Bolton School of Nursing

Kenneth Loparo (CSE)	Sayan Chaterjee (WSOM)
Clemens Burda (A&S)	Ellen Garabino (WSOM)
John Protasiewicz (A&S)	Leonard Lynn (WSOM)
Peter McCall (A&S)	Michel Avital (WSOM)
Peter Whiting (A&S)	Larry Parker (WSOM)
Joseph White (A&S)	Simon Peck (WSOM)
Shannon French (A&S)	James Rebitzer (WSOM)
James McGuffin-Cawley (CSE)	Mark Vortuba (WSOM)
James Kazura (CSE)	Ante Glavas (WSOM)
David Cooperrider (WSOM)	Dario Gasparinni (CSE)
Peter Whitehouse (WSOM / Med)	Elizabeth Banks (A&S)
Gary Murphy (WSOM)	Joe Prahl (CSE)
Christian Zorman (Med)	Hatsudo Ishida (CSE)
Beverly Saylor (Med)	Stephen Ganocy (CSE)
Gerald Matisoff (A&S)	Daniel Tisch (CSE)
Diana Bilimoria (WSOM)	Donald Feke (CSE)
Diane Bergeron (WSOM)	Aaron Jennings (CSE)
Margaret Hopkins (WSOM)	Jiyong Yang (CSE)
Deborah O'Neil (WSOM)	Daniel Melnick (A&S)
Peter Shulman (A&S)	Isaac Greber (A&S)
Mark DeGuire (CSE)	Erika Olbricht (A&S)
Xiangwu Zeng (CSE)	David Warner (A&S)
Claudia Coulton (MSASS)	William Deal (A&S)
Dorr Dearborn (Med)	Tim Beal (A&S)
Ronald Fry (WSOM)	Joy Bostic (A&S)
Roger Saillant (WSOM)	Katia Almeida (A&S)
Linda Robson (WSOM)	Adrian Balok (A&S)
Julia Grant (WSOM)	Cynthia Beall (A&S)
Tim Fogarty (WSOM)	Jim Shaffer (A&S)
Matt Sobel (WSOM)	Brian Redmond (A&S)
Steven Feldman (WSOM)	J. Haile-Selassie (A&S)

Mark Willis (A&S)  
Drushel (A&S)  
James Bader (A&S)  
Rozek (A&S)  
Drewa (A&S)  
Liang (A&S)  
Atit (A&S)  
Silvia Prina (WSOM)  
Mihaljo Mesarovic (WSOM)  
Ralph Harvey (A&S)  
Steve Hauck (A&S)  
Ken Ledford (A&S / Law)  
John Broich (A&S)  
Alan Rocke (A&S)  
Jerry Piven (A&S)  
Joel Levin (A&S)

Si Ostrach (A&S)  
David Mattiesen (CSE)  
Iwan Alexander (CSE)  
Philip Taylor (A&S)  
David Schwam (CSE)  
Mark Bassett (A&S)  
Richard Baznik (A&S)  
Tom Zawodzinski (CSE)  
Robert Savinell (CSE)  
Sreenath (CSE)  
Masarovic (CSE)  
LaShanda Korley (CSE)  
Uzi Landau (CSE)  
Jonathan Adler (Law)  
Catherine LaCroix (Law)  
Susan Tullai-McGuinness (Nur)

## 2) Partial List of specific publications/research/honors: Calendar Year 2009:

### Weatherhead School of Management:

#### Publications:

- Cooperrider, D. L., Fry, R., , . (2009). In Cooperrider and Fry (Ed.), *Is Corporate Citizenship Spreading and Shrinking?* (35 ed., vol. Autumn 2009, pp. 3-6). Sheffield: Journal of Corporate Citizenship.
- Cooperrider, D. L., Fry, R., , . (2009). In Cooperrider and Fry (Ed.), *A Journal That Makes a Difference* (April 2009 ed., vol. 33, pp. 3-6). Sheffield: Journal of Corporate Citizenship.

#### Presentations/Forums:

- Cooperrider, D. L. Global Forum for Business as an Agent of World Benefit, "Managing as Designing in an Era of Massive Innovation", Fowler Center for Sustainable Value, Weatherhead School of Management. (2009).
- Cooperrider, D. L. Sustainable Cleveland 2019, "Sustainability: The Business Opportunity of the 21st Century", City of Cleveland, Cleveland. (2009).

### School of Law:

#### [Jonathan Adler](#) (Professor; Director, Center for Business Law and Regulation):

- Professor Adler's article, "Money or Nothing: The Adverse Environmental Consequences of Uncompensated Land use Controls," has been selected to be reprinted in the 2009- 2010 Land Use and Environmental Review and was one of the ten best in land use and environmental law last year.

- "Eyes on a climate prize will deliver innovation," Op-ed to Tennessean, Feb. 22, 2009
- "Business, the Environment, and the Roberts Court: A Preliminary Assessment," 49 Santa Clara Law Review 943 (2009) (symposium, invited)
- "The Ducks Stop Here? The Environmental Challenge to Federalism," 9 SUPREME COURT ECONOMIC REVIEW 205 (2001) will be reprinted in ECONOMICS OF CONSTITUTIONAL LAW (R. Epstein, editor), forthcoming from Edward Elgar publishers as part of the Economic Approaches to Law series edited by R. Posner and F. Parisi
- *Taking Property Rights Seriously: The Case of Climate Change*, SOCIAL PHILOSOPHY & POLICY, vol. 26, No.2 (2009) [Also published in THE ENVIRONMENT: PHILOSOPHY AND POLICY (Ellen Frankel Paul, Fred D. Miller, Jr., and Jeffrey Paul, eds., Cambridge University Press, 2009).]

Catherine LaCroix:

- *Land Use and Climate Change: Is it Time for a National Land Use Policy?* Ecology Law Currents, <http://boalt.org/elq/EcologyLawCurrentsVolume35Number4-LaCroix.php> (January 19, 2009).

School of Nursing:

- Tullai-McGuinness, S. (2009, July). *Incorporating environmental health principles into nursing education and nursing practice*. Part of a Symposium. Incorporating environmental health principles into education and practice. International Council of Nurses 24<sup>th</sup> Quadrennial Congress. Durbin, South Africa.
- Kilanowski, J.F, Investigator, Preferred Methods of Nutritional Education Instruction: Focus groups with Migrant Farmworker Mothers, American Nurses Foundation, 2008-018, 9/1/08-8/31/09.