UH VS. SMU
ECO GAME with ESPN

Plan to be at the game this Saturday OR free to volunteer? We need YOUR help to educate students about putting their cans and other recyclables in the right containers during tailgating. Or, help us host Coog Alums and their kids painting their vision of a sustainable UH and getting info on GreenUH.

SATURDAY
NOV 19
8:00-10:30 a.m. with ESPN
or 10:30-2:30 p.m.

Email lwolftha@central.uh.edu to sign up
# November 2011

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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</thead>
<tbody>
<tr>
<td>17</td>
<td>3rd annual UHGBC Expo</td>
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<tr>
<td>18</td>
<td>Tour of the Cockrell Butterfly Center</td>
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<tr>
<td>19</td>
<td>UH vs. SMU GREEN Game</td>
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<tr>
<td>22</td>
<td>UH GREENHOUSE Plant Sale</td>
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<tr>
<td>26</td>
<td>Plant @ Campus Community Garden 12-2pm</td>
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<tr>
<td>27</td>
<td>Farmers Market Citrus Festival</td>
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<tr>
<td>30</td>
<td>Farmers Market Citrus Festival</td>
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# December 2011

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>2</td>
<td>EPA Lab Tour with GreenUH</td>
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<tr>
<td>3</td>
<td>Farmers Market Citrus Festival</td>
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<td>5</td>
<td>Outdoor Adventure Lake Day</td>
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<td>9</td>
<td>Sustainability Taskforce Meeting</td>
</tr>
</tbody>
</table>

**Interested in getting involved?**

**EMAIL volunteer.greenuh@gmail.com TO SIGN UP**
Houston-A University of Houston physicist is part of a multi-institution team that has received an $18.5 million grant to develop new technologies to harness solar power more efficiently and economically.

The National Science Foundation (NSF) and the U.S. Department of Energy (DOE) have jointly funded the establishment of a new national Engineering Research Center (ERC), which will oversee the research and development of advanced solar photovoltaic technologies that can provide a large-scale, affordable and domestic sustainable energy source.

The ERC includes researchers from 11 universities, including UH’s Alex Freundlich, an expert and pioneer in the field of quantum and nano-architected photovoltaics. Arizona State University is the lead institution and some 50 companies also will be involved in the project with additional technical and financial support to help the ERC meet its objectives faster.

The ERC for Quantum Energy and Sustainable Solar Technologies, or QESST, is charged with accelerating the United States’ commercialization of solar energy technologies through cutting-edge research, partnerships with industry and expanding educational opportunities in energy engineering.

QESST’s overarching goals are ambitious: Develop affordable photovoltaic technologies that can provide a majority of new electricity generation in the U.S., as well as provide power for up to 1.5 billion people around the world who have little or no access to it.

Photovoltaics (PV) is a method of generating electrical power by converting sunlight into direct current electricity using semiconductors. Photovoltaic cells and panels are typically made of silicon.

Researchers will use advanced materials and quantum mechanics, one of the greatest discoveries of the 20th century, to overcome existing technological barriers to generating more solar energy. Quantum mechanics is used to make devices smaller (thinner), more efficient and multi-functional.

“All of the academic affiliates in this project have established themselves as key players in the solar photovoltaic arenas,” said Freundlich, the QESST principal investigator at UH. “In tackling the grand challenge of making solar energy more affordable, the center will build its research and development efforts on three vertically integrated thrusts that will address barriers from basic science to devices all the way to terawatt scale manufacturing.”

Freundlich, who is with UH’s Center for Advanced Materials, will address the project’s fundamental science and material engineering aspects. In particular, Freundlich and his team will explore novel device concepts and nano-materials that could lead to breakthroughs in the efficiency and cost of PV devices, which could revolutionize the PV industry.

Freundlich has a strong track record in technology transfer to industry. Several of his patents are actively licensed to industry, generating significant revenues for UH.

“ERCs are the crown jewel of the National Science Foundation’s science and engineering program,” Freundlich said. “What’s unique about QESST is that this is the first ERC to be jointly funded by the NSF and DOE and it’s the first pure solar ERC in the nation.”

The grant will fund the ERC for five years. Freundlich’s share totals about $1 million.

The UH team also will support the educational goals by reaching out to K-12 students and providing research training for undergraduates and high school teachers.

For more information about QESST, visit: www.qesst.org
PLEASE JOIN US!

University of Houston

GREEN BUILDING COMPONENTS
EXPO 2011

AN EXHIBITION OF APPLIED RESEARCH IN GREEN TECHNOLOGY FOR THE BUILT ENVIRONMENT
featuring keynote remarks by Jim Blackburn, Blackburn & Carter

Parking available in lot 16B.
Special Guest parking available in lot 18B

NOVEMBER 17 | 5-8PM
OPENING RECEPTION At the Gerald D. Hines College of Architecture

UHGBC is generously supported by
HOUSTON ENDOWMENT & MEADOWS FOUNDATION

www.UHGBBC.org
Interested in seeing the Environmental Protection Agency doing real science at their lab

The EPA Region 6 lab specializes in conducting organic, inorganic, and biological processes. They also conduct audits of environmental monitoring laboratories and public water supply laboratories, as well as overseeing accreditation of Region 6 state authorities.

Friday, Dec. 2

Carpool with us to an official lab tour with GreenUH. We’ll meet at the Cougar Card Office (in the Welcome Center Garage) at 11:15 AM. The tour starts at noon, and is expected to last 1-1.5 hours. It will include a short presentation on how the EPA is helping the environment and the lab tour. We’ll probably arrive back at 2PM. So if you’re interested in visiting an actual EPA laboratory, please take this opportunity. There’s a 15-20 student cap, so first come, first serve.

Deadline is December 1.
R.S.V.P to Michael at michaelnguyen@live.com
University of Houston OUTDOOR ADVENTURE www.uhrecreation.com

Outdoor Adventure
Backpacking the Grand Canyon

Enter the corridor of the Grand Canyon for the most physically demanding Thanksgiving of your life.

Cost:
$375 Member
$400 Non-Member

Register today!
Spots are limited.
OA Office
CRWC 1017

Outdoor Adventure
Lake Day

December 5

Unwind and clear your mind before finals by spending a day at the lake, including activities such as swimming, hiking, biking, and kayaking.

Cost:
$20 Member
$25 Non-Member

Register today!
Spots are limited.
OA Office
CRWC 1017

For further Information call 713-743-0808 or email cwells@uh.edu

Upcoming Dates: Feb. 3 | April 13 | June 1
Sustainability Taskforce meeting

DEC 9 | 9-11 a.m.
open to the public for observation
E Cullen conference rm. 226

Questions? Email lwolftha@central.uh.edu
# Spring Courses in Sustainability

## Architecture

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
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## Biology

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BIOL 4206</td>
<td>Ecology and Evolution Laboratory</td>
<td>Field and laboratory exercises illustrating concepts in evolution, economy, and animal behavior.</td>
</tr>
<tr>
<td>BIOL 4368</td>
<td>Ecology</td>
<td>Current concepts of the interrelationships between organisms and the environment</td>
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## Civil Engineering

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CIVE 6391</td>
<td>Environmental Engineering Microbiology</td>
<td>Fundamental aspects of microbiology and biochemistry as related to environmental pollution and water quality processes, engineering energetics and kinetics of microbial growth, and biological fate of pollutants.</td>
</tr>
<tr>
<td>CIVE 6322</td>
<td>Stormwater Management</td>
<td>Detention pond analysis and design, stormwater analysis and management alternatives, governmental criteria, and computer programs.</td>
</tr>
<tr>
<td>CIVE 6361</td>
<td>Engineering Hydrology</td>
<td>Distribution and flow of water in the hydrosphere. Engineering methods to quantify and model rainfall, runoff, recharge, and groundwater flow. Conceptual models and application of computer methods for hydrological analysis and design problems.</td>
</tr>
<tr>
<td>CIVE 6388</td>
<td>Hazardous Waste Processes</td>
<td>Physical and chemical principles of solid and hazardous waste treatment processes; mass conservation equations, transport phenomena, phase equilibria, fluid flow in porous media with applications to soil vapor extraction, soil vapor extraction, soil leaching/flushing, stabilization, and bioremediation processes.</td>
</tr>
<tr>
<td>CIVE 3331</td>
<td>Environmental Engineering</td>
<td>Introduction to air, water, and environmental pollutants, and concepts of design for treatment.</td>
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## Construction Management

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>CNST 6380</td>
<td>Lead &amp; Green Construction Principles in Const Management</td>
<td>Green construction methods and benefits in applying the Ledarship in Energy and Environmental Design (LEED) principles</td>
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## Curriculm and Instruction

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<tr>
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<tbody>
<tr>
<td>CUIN 4305</td>
<td>Teaching Environmental Education</td>
<td>Curriculum, methods, and materials for K-12 environmental education.</td>
</tr>
</tbody>
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## Electrical, Computer Engineering

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ECE 6397</td>
<td>Selected Topics (Solar Cells)</td>
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## Economics

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
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<tbody>
<tr>
<td>ECON 6345</td>
<td>Energy Economics</td>
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## Geology

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>GEOL 1340</td>
<td>Earth Systems</td>
<td>Earth’s dynamic systems emphasizing the interactions among the atmosphere, hydrosphere and lithosphere. Includes the processes by which the earth was formed and continues to be modified as well as how humans affect and are affected by those processes.</td>
</tr>
<tr>
<td>GEOL 3332</td>
<td>Geology of U.S. National Parks</td>
<td>Geologic evolution of North America and its landscape as illustrated by selected national parks and monuments of the United States.</td>
</tr>
<tr>
<td>GEOL 3333</td>
<td>Earth Resources</td>
<td>Mineral and energy resources of the planet Earth; their origin and discovery. Environmental impact of their exploitation; future prospects.</td>
</tr>
<tr>
<td>Geology 3342</td>
<td>Introduction to Air Pollution</td>
<td>Structure of the atmosphere, anthropogenic and natural emissions of pollutant precursors, meteorological influences on pollutant transport and diffusion, chemical transformations, and health effects of pollution.</td>
</tr>
<tr>
<td>GEOL 3377 Oceanography</td>
<td>Introduction to the world’s oceans and oceanic processes.</td>
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| LAW 6221 Environmental Enforcement | This course will focus on how agencies and courts enforce environmental laws and the critical role that enforcement plays in assuring compliance and protecting the environment. We will review the principles of civil and criminal liability under environmental laws, assess ways to design effective environmental regulations, examine how federal and state agencies use these tools, and craft techniques to help clients minimize their potential liability. Our examination will center on practical strategies to manage these liabilities particularly in regard to CERCLA, RCRA and the Clean Water Act. This course will use a combination of lectures, class discussions, in-class exercises and sample problems, and case studies. We will use role-playing exercises to give students experience in real-life enforcement negotiations and prosecutions. |

| LAW 6362 Natural Resources Law | Natural Resources Law is the body of legal rules and processes that govern the human use, management, and protection of nature. In this course, we will survey the history of resource acquisition and management, as well as current mechanisms for the management, use, and preservation of natural resources, including wildlife, wilderness, rivers, national parks, and energy. Among other issues, we will consider the history, jurisdiction, and authority of land management agencies and various statutes such as the Endangered Species Act, the National Environmental Policy Act, and the Federal Land Policy Management Act...Throughout our study of these doctrinal issues, we will also consider competing ideas about how and why natural resources should be valued, used, and conserved. |

| LAW 5397 Selected Topics (Climate Change Law) | This course will focus on the foundations, options and challenges to the use of environmental law to address climate change and to determine the obligations or liability of parties allegedly contributing to it. We will review the current state of knowledge about the science underlying climate change findings and predictions, examine how environmental and tort laws have adapted to address earlier novel environmental threats and risks, explore the fast-growing network of international agreements, federal regulations and state laws that govern emissions of greenhouse gases or attempt to prepare for climate change effects, and assess how courts have responded to climate lawsuits and their specific legal challenges and evidentiary. Our examination will center on a practical examination of how this new field of law will affect real-world legal policies, permitting lawsuits, and transactions. |

| LAW 7333 Seminar: Energy, Law & Policy | Students may choose a topic on any issue related to energy, resources, and the environment...The seminar requires that students submit key stages of the research on a defined timetable of deadlines...The class meets weekly and focuses on research techniques in the first weeks. Class readings cover general energy issues of the day, but are kept light so that students can focus on their research topic. |

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<th>MANAGEMENT INFORMATION SYSTEMS</th>
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| TECH 4310 Future of Energy & Environment | Social patterns that will drive alternative energy and environmental conditions in the future. |
Recipe of the Week

Butternut Squash with Walnuts and Vanilla

Ingredients
- 1 butternut squash, flesh cut into 1-inch cubes
- Salt
- 1 heaping cup of walnuts (can substitute pecans or pine nuts)
- 2-3 Tbsp butter
- 2 teaspoons grated ginger
- 1-2 teaspoons vanilla extract
- Lemon juice
- 1/2 teaspoon dried thyme
- Black pepper to taste

Directions
1. Preheat oven to 400°F. Coat the cubed squash with a little vegetable oil and spread out onto a baking tray. Sprinkle with salt and roast until the cubes begin to brown, about 20 minutes. Remove from oven.
2. Heat a large sauté pan over medium-high heat and toast the walnuts. Stir frequently or they will burn. Once they start to brown, and you can smell the aroma of toasted walnuts, remove from heat.
3. Melt the butter in the pan with the walnuts over medium-high heat. Toss the walnuts to coat with butter, then add the squash. Toss them to coat with butter.
4. Add the grated ginger, vanilla extract, black pepper, a little salt and dried thyme and toss once more. Turn off the heat and squeeze some lemon juice over everything. Taste for salt and lemon and add more to taste. If you want this to be a bit more luxurious, mix in another tablespoon of butter or two before serving.
Volunteers Wanted

EMAIL volunteer.greenuh@gmail.com to sign up

Saturday
Nov 26
12-2 p.m.

Corner of Wheeler & Cullen
Citrus Tastings at the Farmers Market Citrus Festivals
Join us in this visual and tasting experience as Houston chefs prepare unique and unusual varieties of citrus that are available to cook and grow in Houston. Experience unique oranges, pumelos, kumquats, satsumas, lemons, limes and grapefruit. Find out how you can cook using citrus for the holiday. There will also be information available on fruit that you can be growing in your yard.
Free, No Registration Necessary
WHERE: Highland Village Farmers Market
WHEN: Sun, Nov 27, 11:00 am - 1:00 pm
---
WHERE: City Hall Farmers Market
WHEN: Wed, Nov 30, 12 noon - 2:00 pm
---
WHERE: Eastside Farmers Market
WHEN: Sat, Dec 3, 9:00 - 11:30 am

Fruit Trees for Your Backyard
Do you want to be able to eat fruit from your backyard or patio? Find out about fruits you can easily plant at your home this winter.
Free, No Registration Necessary
WHEN: Wed, Nov 30, 11:00 am - noon
WHERE: City Hall Farmers Market

Planning the Spring & Summer Vegetable Garden
Experienced gardeners know that a great spring and summer garden begins in the winter. Learn what varieties to plant and when, soil prep, seed germination and transplanting. This class will cover the types and varieties of vegetables that can be planted in late spring through summer.
Registration Required.
WHERE: University of Houston, Central Campus
WHEN: Thu, Jan 19, 2012 , 6:30 - 9:00 pm
Non-Member: $35.00
Member: $23.00
Instructors: Diana Liga is a Horticulture graduate of Texas A&M and an avid vegetable gardener. Ray Sher has a large backyard garden where he grows vegetables for the Urban Harvest Farmer’s Market. He has been growing vegetables since about 1991.
There are no refunds on classes.
Up-coming Events:

Our special Guided Horticulture Tour of the Cockrell Butterfly Center, at the Houston Museum of Natural Science is this Friday, November 18th.

The time to RSVP is NOW. We will be taking a guided tour of the Cockrell Butterfly Center and the maintenance greenhouses on the roof of the building. The tour will be given by either Dr. Nancy Grieg or one of the Horticulturalists working at the center. The tour will be given from the perspective of how to grow and maintain special plants. Unusual characteristics of some of the plants maintained at the center will be highlighted. Students will have a chance to ask questions about career paths as well.

Plant sale is scheduled for Tuesday, November 22nd.
It’s only one day this time, so we’ve got to make it count!

Questions?
Most importantly, we’d like for you to respond with your own questions so they can be more specifically answered.
Please never hesitate to email us at uhgreenhouse@gmail.com

Communication and the spreading of information is one of our main goals, so keep the lines open!