Research & Education toward Sustainability
Institute for Environmental Sustainability at Loyola University
Chicago IL : : 4 June 2014

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Roosevelt University: a Snapshot

Founded 1945

- Campuses: downtown Chicago, suburban Schaumburg, online
- 6 colleges
  - Arts & Sciences
  - Business
  - Education
  - Performing Arts (Music / Theater)
  - Pharmacy
  - Professional Studies
- Level II comprehensive institution
- 6,145 students (3,650 undergrad)
- Racially and geographically diverse
- Social justice-centered mission

Photo: AIA
Sustainability at Roosevelt
Off to a Running Start Since 2010

**Sustainable Buildings & Operations**
- Wabash Building
- Goodman Center
- Schaumburg Campus Redevelopment

**Academic Innovation**
- Sustainability Studies undergrad program launched Fall 2010 (1st in Chicago)
- Environmental Science Minor revamped Fall 2012
- SENCER pedagogy in Biology & Chem
- Service Learning & Internships

**Student Organizations & Activism**
- Env Sust Internships on campus
- RU Green (campus events)
- Net Impact (business and sustainability)
- RU Reforesting (conservation)
- RU UrbanPioneers (Schaumburg garden)
Sustainability at Roosevelt
Selected Awards & Recognition in 2012-14

Campus Operations / Facilities
LEED Gold: Wabash Building
LEED Silver: Goodman Athletic Center
Tree Campus USA for RU Schaumburg
Green Innovation / Green School award from USGBC
IL Governor's Sustainability Award 2013

Academics
Business: Real Estate grad students win 2013 & 2014 Eisenberg competition
Biology: Conservation Biology students travels to Tanzania to do environmental conservation
Sustainability Studies: students win prestigious NSF research fellowship, garner local internships, lead campus sustainability planning, write for SUST blog
Integrating & Enhancing RU's Academic Programs through Sustainability

- Sustainability Studies
- Biology & Chemistry
- Bennett Institute of Real Estate
- Hospitality & Tourism Management
- Environmental Science
- Mansfield Institute for Social Justice
• Fosters environmental literacy through interdisciplinary work in the natural sciences, social sciences, and humanities;
• Engages public policy concerns surrounding consumption, energy usage, and viable economic growth;
• Explores social justice issues on a range of fronts, including environmental justice, resource allocation, urban development, and social equity;
• Educates students to be leaders on issues of sustainability, one of the critical issues of the 21st century.

Sustainability Studies Program (Founded 2010)
Sustainability Studies Major

Core Courses
- SUST 210 Sustainable Future
- SUST 220 Water
- SUST 230 Food
- SUST 240 Waste

Advanced Courses
- SUST 310 Energy & Climate Change
- SUST 320 Sprawl, Transportation, & Planning
- SUST 330 Biodiversity
- SUST 340 Policy, Law, & Ethics

Special Options
- SUST 350 Service & Sustainability
- SUST 390 Special Topics
- SUST 395 Internship
Environmental Science Minor (Revised 2012)

Philosophy

**Interdisciplinary:** Students take courses in biology and chemistry, as well as an introductory course

**Adaptable:** Students majoring in all disciplines have routes to succeed in this minor

**Independent Thinking:** All students complete a capstone course working with real-world data and independent labs

*Capstone students performing a soil plant/organism toxicity testing*
'Sustainability beyond the Campus
Connecting Curriculum to Community

Address real-world problems & challenges

Empower students through research, field experiences, & service learning

Advance sustainable development & social justice

Integrate, enhance, & develop academic programs & partnerships
Field Experiences: The Chicago River

Understanding the river as a modified natural ecosystem (natural sciences)
Developing conservation policies (social and natural sciences)
Representing the river as a cultural resource (arts and humanities)
Restoring the river: water quality, biodiversity, riparian zone integrity, citizen access and recreation (all disciplines)

Sense of Place | Urban Sustainability
Canoeing the Upper North Branch

River as Wilderness
Paddling the West Fork of the Upper North Branch (October 2012)
Canoeing the Confluence

River as Architectural Wonderland
Heading south into the Loop where the N and S branches meet (October 2011)
Canoeing the South Branch

River as Industrial Wasteland
Paddling upstream on Bubbly Creek (Oct 2010)
A chicken stands upon Bubbly Creek, c.1911 (Chicago Historical Society)
Reshaping the Present

Hauling trash out of Bubbly Creek on a SUST service field trip (Feb. 2013)
Assessing Water Quality (Chemistry)

- Temperature
- pH
- Turbidity
- Dissolved oxygen (DO)
- Nutrients (nitrate, phosphate)
- Bacterial indicators (coliform)
- Metals and organic contaminants (lead, copper, benzene, PCBs, hexavalent chromium)
- Emerging contaminants (pharmaceuticals, synthetic hormones, flame retardants)
Assessing Water Quality (Biology)

Sampling macro-invertebrate benthos in the North Branch (May 2010)
Engaging the Community

Identifying macro-invertebrates from the North Branch (May 2010)
Field Experiences: Lake Michigan

- Introductory: Service learning
  - Alliance for the Great Lakes “Adopt-a-Beach” cleanup

- Advanced: Faculty-led research
  - Toxic metals in zebra mussels
Engaging through Science: SENCER & Sustainability

Search Results on SENCER Resources Website:

- **Sustainability** (157 matches)
- **Environment** (244 matches)
- **Urban** (80 matches)
- **Service Learning** (227 matches)
Teaching College Science and Math Through Food, Health and Sustainability Themes
Roosevelt University, Schaumburg Campus (March 2014)
Science and Math Spring Symposia

2013 Theme: Sustainable Science
Pictured here: 2012 Symposium at RU's Schaumburg Campus
SUST students present research and/or projects done for their internships to the RU community and general public
Oct 2013: agroecology, urban farming, transportation policy (right)
May 2014: campus redevelopment, FMNH collections, marine biodiversity (left)
Great Lakes Bioneers 2013

Call to Action

bioneers

Celebrating Community Resilience

November 1-3, 2013 • Roosevelt University, Chicago

Buy your ticket online at bioneerschicago.org and join the movement of visionaries and innovators working to solve our greatest social and environmental challenges!

Exploring Solutions Guided by Nature

2nd Great Lakes Bioneers Conference | hosted by RU's Chicago Campus
SUST Action Research Projects

SUST 350 Service & Sustainability / Spring 2013
Action Research Projects for the Chicago Lights Urban Farm
SUST Action Research Projects

Community Empowerment and Youth Enrichment (CEYE) Program

Community Gardeners’ Guide

Farm Education Lessons and Activities

Knowing Your Neighborhood: Community Assets Brochure and Map

Rainwater Harvesting Plan

Self-Guided Tour and Farm Map (left)
Student Travel & Research:
Conservation Biology in Tanzania

BIOL 369 Conservation Biology travel course to Tanzania
Spring 2013 (photos by N. Burns)
Student Research at the Field Museum

SUST 330 Biodiversity / 2012-14
Field Museum of Natural History, Chicago IL
Student Research at RU

Environmental Toxicology Lab

Zebra mussel metal bioaccumulation in Lake Michigan

Earthworm avoidance of toxic metals

*The earthworm toxicology lab utilizes compost generated from RU’s cafeterias to maintain earthworm culture.*

Metal bioaccumulation in native mussel shells

*Conducted in partnership with the INHS.*

Other research

Native pollinators and prairie restoration

Invasive and native plant communities in East African savannas
Sustainability Education & Research: from Campus to Community

Schaumburg's Sustainable Future
a student-authored website and blog
focused on documenting & advancing sustainability in the suburbs

SUST 240 Waste Audit / Fall 2013
RU's Schaumburg Campus
Schaumburg IL c. early 2000s

Figure 1a. Natural Resource Inventory Village of Schaumburg Northeast Section

Map from the Schaumburg Biodiversity Plan (2004)
Roosevelt University is committed to transforming the Robin Campus into a truly sustainable site. The landscape plan here is being implemented using native plants and sustainable water conservation methods to transform this campus into an environmentally sustainable, cost-effective earthscape. The result: a beautiful setting which supports biodiversity, uses less water, costs less to maintain and enriches campus lifestyle.

**Good Stewardship Makes Good Sense**

**Economic:** the conversion to native plants was paid out of savings from funds previously spent on turf maintenance. The University saves 50% annually overall on landscape maintenance, primarily due to the native plantings which save 80% over the cost to maintain turf.

**Environmental:** Native plants require less fertilizer, herbicides, fuel and labor. They beautify and support biodiversity. Natives have deep roots which absorb water, reduce runoff, thus reducing energy and water use while providing effective bio-regulation of this habitat.

**Social:** The Robin Campus uses less resources and generates fewer pollutants, demonstrating corporate social responsibility by planting natives and observing sustainable site practices.
The RU Community Garden, summer/fall 2013 (photos: M. Radeck)
Prescribed burn of detention pond/wetland (April 2011)
Prairie restoration at detention pond (Fall 2012)
RU Campus: From concrete slab . . .

Aerial view of RU Schaumburg Campus, pre-re redevelopment (Google Maps)
Schaumburg Campus prairie restoration, Summer 2013 (M. Radeck, a SUST major who also coined *this phrase)

http://www.public.iastate.edu/~amytoth/Toth_lab/Research_Areas.html
Sustainable Development & Creative Thinking

Bennett Institute for Real Estate student team: Winners of the 2013 & 2014 Eisenberg Foundation Midwest Real Estate Challenge

SUSTAINABILITY: UP-CYCLING
The Marquette Park Promenade

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<th>Development Pts</th>
<th>Max Pts</th>
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<td><strong>67</strong></td>
<td><strong>119</strong></td>
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Building Community Partnerships in Sustainability

Field Museum of Natural History
Friends of the Chicago River
Chicago Lights Urban Farm
Chicago Architecture Foundation
Chicago Wilderness
Center for Humans & Nature