Creating a Sustainable Future
Sustainability and Interdisciplinary Education

Michael A. Bryson, Roosevelt University
Joliet Junior College Faculty Retreat on Sustainability & Curriculum
Midewin National Tallgrass Prairie | 3 June 2012
JJC's Many Sustainability Assets

Biology and Environmental Science

Horticulture and Landscape Design

Architecture and Construction

Arts and Humanities

Experimental Farm and Agricultural Sciences

Students = energy!
Roosevelt University: a Snapshot

- Campuses: downtown Chicago, suburban Schaumburg, online
- 6 colleges
  - Professional Studies
  - Arts & Sciences
  - Performing Arts (Music / Theater)
  - Business
  - Education
  - Pharmacy
- Level II comprehensive institution, established 1945
- 7,300 students (4,200 undergrad)
- Racial and geographic diversity
- Social justice-centered mission

RU's Wabash Building, Chicago's first LEED-certified skyscraper (opened May 2012)
Sustainability Studies

• 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.
Greening the University: A Three-fold Process

Greening the Physical Campus

Launching Sustainability Studies

Making Community Connections
In a Sustainable Future:

**Environmental resources** are conserved for both future human generations as well as non-human biota.

**Economic development** occurs not at the expense of the natural environment, but in a way to mitigate ecological costs and impacts.

**Equity** – social, economic, and environmental justice – governs the process of sustainable development.

The green roof of Chicago’s City Hall (source: City of Chicago)
## SUST Curriculum at Roosevelt

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

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

### Special Options
- **SUST 350**  Service Learning
- **SUST 390**  Special Topics
Crosscutting Themes

Science and Environmental Literacy
Environmental and Social Justice
Urban and Suburban Systems

Pedagogical Highlights

Interdisciplinary Learning
Field Trip Experiences
Service Learning Opportunities
F2F, Online, and Hybrid Classes
Course Pedagogy

The Chicago River as a modified natural ecosystem (natural sciences)
Policies impacting water quality, river use, sewage treatment (social and natural sciences)
Representations of the river as a cultural resource (humanities)

Program Development

Institutional context (where is there room?)
Faculty collaboration (which disciplines and how many?)
Sustainability issues / themes vs. academic departments (how do you slice the pie?)
SUST Field Trips

Hands-on education using the urban and suburban environments as learning laboratories

Cultivation of academic-community partnerships / service-learning opportunities

Des Plaines River Wetlands Demonstration Project (spring 2009)
Exploring the waters of the Des Plaines River Wetlands Demonstration Project (fall 2010)
Testing the water quality of the Chicago River's North Branch (May 2010)
Chicago Center for Green Technology – learning about sustainable design (Feb. 2012)
Canoe trip down Bubbly Creek, an industrialized tributary of the South Branch of the Chicago River (May 2009)
Service Learning Opportunities

Curriculum

- **SUST 230 Food** (community gardens and urban agriculture)
- **SUST 220 Water** (watershed monitoring and stream restoration)
- **SUST 330 Biodiversity** (non-native species control and biodiversity surveys)
- **SUST 350 Service and Sustainability** (environmental justice, community-based research, social activism)

Partnerships

- Growing Power (urban agriculture)
- Field Museum of Natural History
- Friends of the Chicago River
- Chicago Wilderness
- Institute for Cultural Affairs
- Local Community Colleges
- Chicago Public Schools

(at right: RU students and faculty at the Chicago Lights Urban Farm)
The SUST Curriculum Map

Tying learning outcomes to program assessment

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<td>1. Identifying and explaining central sustainability problems</td>
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<td>2. Developing scientific, environmental, and quantitative literacy</td>
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<td>3. Applying the scientific method and quantitative literacy to natural and social ecosystems</td>
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<td>4. Recognizing social justice implications in local and global contexts</td>
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<td>5. Understanding political processes and policy actors</td>
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<td>6. Understanding the importance of ethics, leadership, and technical innovation for social and environmental change</td>
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<td>7. Applying knowledge about sustainability to areas of personal interest and/or work professions</td>
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Key to map:

X = learning outcome is addressed in course
Shading = learning outcome is a core focus of course
Sustainability in the City
Endangered and Threatened Species in IL

North Branch of Chicago River Restoration Sites

Sources: Illinois DNR (1993); North Branch Restoration Project (2009)
Chicago area business as usual growth trend vs. Metropolis Plan concept.

Image credit: Chicago Metropolis 2020
Schaumburg
The "Edge City"

Key Features:

- Sustainability initiatives
- Good bike path / lane system set for improvements
- Park district / conservation areas

Challenges:

- Sprawling development
- Lack of high-quality open space
- Car-dependent transportation

Schaumburg
Pop. 74,227
Area: 19 mi²
Density: 3906
Schaumburg: Open Space

Spring Valley Nature Center / Prairie Restoration (M. Bryson)
Figure 1a.
Natural Resource Inventory
Village of Schaumburg
Northeast Section

Source: Schaumburg Biodiversity Plan (2004)
A Green Vision for RU's Suburban Campus

In progress at the Schaumburg Campus (opened 1996):

**Sustainable landscape plan:** native plants, prairie plots, walking paths, orchard, edible landscapes

**Water conservation strategies:** bioswales, cisterns, rain gardens, pervious paving

**Outdoor education / recreation:** experimental wetland restoration, native plant gardens, greenhouse, community garden / urban farm

RU's 24-acre suburban campus presents a golden opportunity for the university to put green design principles into practice as a model of sustainable landscape redevelopment. The campus is dominated by parking lots, but also has underutilized green space. A landscape plan developed by a campus sustainability committee and Bedrock Earthscapes has inspired us to replace turfgrass with native vegetation, manage the wetland/detention pond, and begin composting.
Above: The "old look" at Schaumburg Campus, where parking lots of turf grass (along with many native and non-native trees) dominate the grounds. Much of the grass has been replaced by prairie plantings in spring/summer of 2011. Over time, asphalt will be replaced by pervious paving to allow water retention onsite.

Right: A prescribed burn of the wetland detention pond in spring 2011, the first ever on campus. This serves to discourage non-native woody species and encourage native wetland plants.
Joliet
The Satellite City / River Town

Key Features:
• Urban density (in places)
• Public transit access (underutilized)
• Downtown core / historic buildings
• Bike-able (to some degree)
• Pilcher Park / County Forest Preserves
• Emerging culture of sustainability

Challenges / Opportunities:
• Sprawling development
• East Side vs. West Side (access & equity)
• Quality of waterways
• Gardening & urban farming
• Sustainability & education
• Prairie, river, & wetland restoration

Joliet
Pop. 147,433
Area: 38.1 mi²
Density: 3874
Joliet: Biking

Bike to Metra Map for Joliet IL (2010)
Hickory Creek on Joliet's East Side (March 2011)
JJC's LEED-certified Greenhouse / USF-Cool Joliet's Community Garden
Joliet: Urban Farming & Education

JTHS-owned open space west of JT Central Campus, downtown Joliet (M. Bryson)
Will County's Agricultural Heritage

Will County farmland south of Joliet, June 2006 (M. Bryson)
JJC's Many Sustainability Assets

Biology and Environmental Science

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Experimental Farm and Agricultural Sciences

Students = energy!
Student garden at Hufford Junior High, Joliet (courtesy of District 86)
The Improbable Is Possible

Growing Power's **Chicago Lights Urban Farm** in Cabrini-Green, Chicago (M. Bryson)
Growing Power's Chicago Lights Urban Farm in Cabrini-Green, Chicago (M. Bryson)
Midewin National Tallgrass Prairie (Adrian Ayers Fisher)