

Campus Creeks as Living Labs for Sustainability Learning

Caroline Christian, Department of Environmental Studies and Planning
Paul Draper, Director of Sustainability



Top row from left to right, native species found in campus creek habitat: steelhead, western pond turtle, and mountain lion. Bottom row from left to right: monitoring creek vegetation and a class field trip.

Typical campus sustainability programs tend to focus on the built environment. SSU offers a unique opportunity to explore linkages between the natural environment and campus activities.

Sustainability challenges facing the campus and creek:

- Impaired water quality due to sedimentation and runoff of herbicides, pesticides, and other harmful chemicals.
- Invasion by non-native plant and animal species.
- Increased flood risk due to development in floodplain.
- Reduced habitat connectivity with adjacent natural areas.

Course to be redesigned: Restoration Ecology (ENSP 423) | Beta version: Fall 2015, Full redesign: Fall 2016

Existing Course Objectives

- Explore the scientific and social rationale for ecological restoration.
- Understand the foundations of restoration ecology.
- Appreciate the interdisciplinary nature of restoration.
- Gain fluency in the literature on restoration ecology.
- Hone technical writing skills.
- Increase proficiency in collecting and analyzing data.
- Gain hands-on experience with local restoration practitioners.

Why Course Redesign?

- New opportunities to link class curriculum with larger sustainability efforts on and off campus.
- Need for practical and applied experiences that are relevant outside of classroom.
- Desire among students and employers for better-developed 'soft skills' (interpersonal skills, communication, collaboration, etc.).
- Need for streamlining ongoing class project that allow students to explore sustainability principles and contribute to community research needs.
- Opportunity to improve in-class and online instruction (via Moodle) through learner-centered exercises.

Course Redesign Goals

1. Involve students in developing ecological goals for campus sustainability efforts and designing monitoring program to assess progress towards goals over time.
2. Empower students through hands-on restoration and enhancement of local campus creek.
3. Train students to be biodiversity/sustainability ambassadors for the campus and beyond.
4. Provide opportunities to develop 'soft skills' through group projects and community engagement.
5. Better link course with other components of curriculum to provide well-rounded training in ecological restoration.

New Course Elements

- Collaborate with campus facilities, local agencies, and other academic departments at SSU to implement components of the Copeland Creek Master Plan (goals 1, 2, 4).
- Design long-term creek vegetation monitoring program to be conducted by class each fall (goals 1, 4, 5).
- Develop educational materials on role of Copeland Creek in campus sustainability and watershed restoration efforts (signage, self-guided tour, website) (goals 1, 2, 3, 4).
- Integrate SSU's native plant propagation program into restoration curriculum (goal 5).

Campus as a Living Lab

Students Motivating Student Sustainability

Classroom Measurement and Feedback of Student Residential Resource Use

Daniel Soto, Chair, Department of Environmental Studies and Planning
Paul Draper, Director of Sustainability



Feedback Loop for Campus-Student-Energy System



Goals for Project

- This course will use current data from the student residences as the basis for class projects to quantify energy use and devise strategies to reduce student use with visualizations and communication.
- Students develop skills in analysis and visualization of energy and resource use.
- Students become motivated by the local data collected by peers from campus.
- Students create internet energy visualizations viewable by the campus community.
- Students increase awareness of the link between energy use and behavior.

Redesigned Courses

- Electrical Energy Management (ENSP 338)
- Computer Applications in Energy Management and Design (ENSP 439L)

Timeline for Implementation

- ENSP 338 Fall 2016
- ENSP 439L Spring 2017

Student Learning Outcomes and Program Assessment

- Students use digital tools to analyze and communicate energy use.
- Students understand social dimensions of energy use.





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Sonoma State University



Course to be redesigned

Restoration Ecology (ENSP 423)

Beta version Fall 2015

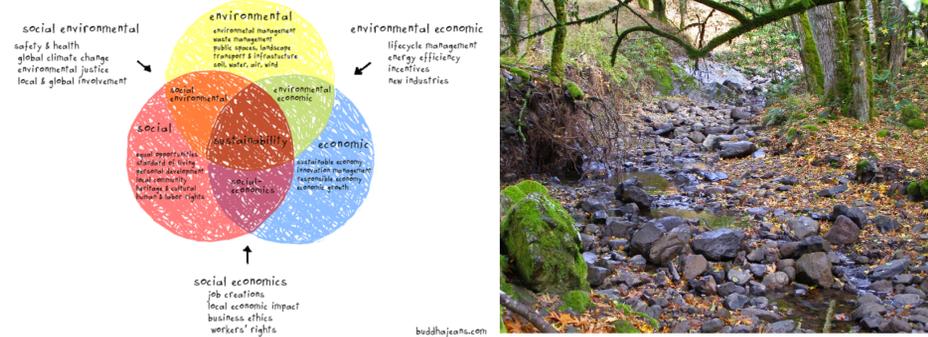
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Why course redesign?

- Missed opportunities to link class curriculum with larger sustainability efforts on and off campus
- Need for practical and applied experiences that are relevant outside of classroom
- Desire among students and employers for better-developed 'soft skills' (interpersonal skills, communication, collaboration, etc.)
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Key native species found in campus creek habitat: A) steelhead; B) western pond turtle; and C) mountain lion.



Students A) monitoring creek vegetation and B) on class field trip.

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