Levenick iSEE Teaching Sustainability Fellows – 2019 Course Development Cohort

Overview

The Institute for Sustainability, Energy, and Environment (iSEE) is pleased to invite you to join the Teaching Sustainability Initiative’s 2019 Course Development Cohort, a program targeted to intentionally grow the University of Illinois’ sustainability course offerings to all students.

As a participant in the 2019 Teaching Sustainability Course Development Cohort, you will emerge from the program with:

- A comprehensive working definition of sustainability for practical application in the classroom.
- A framework for understanding the components of sustainability and how each relates to your background and expertise.
- Lists of readings and short videos that you can use in your class or classes.
- Draft exercises that you might use in your classes and examples of how other instructors have incorporated sustainability into their courses.
- A set of opportunities for exploring sustainability on campus through the landscape, buildings, operations, transportation, and Illinois Climate Action Plan (iCAP) objectives.
- A cohort of colleagues with similar goals to infuse sustainability into their teaching.
- A stipend to be used as you see fit as a compensation for your time and effort.

The cohort consists of 4 components designed to make it as easy as possible for you to add sustainability to your teaching:

1. *Teaching Sustainability Retreat.* iSEE will host a kickoff retreat in late spring of 2019. Attendees will work alongside subject matter experts from a varied array of disciplines to begin the development of lesson plans and exercises appropriate for courses in each attendee’s given field.

2. *Feedback and Support.* Throughout the summer of 2019, iSEE and subject matter experts in sustainability will be on hand to provide feedback on your initial plans and course revisions.

3. *Fall Check-In.* In October 2019, iSEE will host a luncheon for members of the cohort to discuss lessons learned, things that may bear revision in the future, and plans for the upcoming Spring 2020 semester. Participants reworking an existing course will be expected to submit their instruction plans around the time of this meeting.

4. *Debriefing.* During the Spring 2020 semester, participants from the 2019 cohort will discuss reflections on the course development process and make recommendations for the coming year. They’ll also have the opportunity to meet the incoming 2020 cohort and share their insights with them.

Faculty and instructors of record will receive a stipend for their participation in the above components. Graduate assistants and postdocs who will assist with the modifications to existing courses or development or new courses are also welcome to sit in on any of the above activities.
Funding Opportunities

To incentivize the time and effort invested in the revision of existing courses and development of new courses, iSEE is offering two levels of stipend to faculty and instructor participants in the program:

- $1,000 to faculty adding significant sustainability components to a pre-existing course or courses, with an expectation that this course / these courses will be taught no later than the Spring 2020 semester.
- $2,000 to faculty creating a new course or courses with a sustainability focus, with an expectation that this course / these courses will be taught no later than the Fall 2020 semester.

Half of the stipend amount will be offered upon acceptance to the cohort; the other half will be provided after provision of final syllabus and start of instruction.

Application Process

By applying for this opportunity, participants agree to:

- Participate in the events above except in the case of an unavoidable schedule conflict.
- Commit to preparing and submitting a description of the course modification or creation within a week of the end of the Teaching Sustainability Retreat.
- Provide a final syllabus, course modifications, and summary of outcomes from the experience.

To apply, please email sustainability-education@illinois.edu with the following:

- Name.
- Departmental Affiliation and Title.
- Preferred email address and telephone number.
- Intended subject area of course or courses.
- A brief (100-250 words) description of how you plan to change an existing course or develop a new one that will incorporate sustainability.

Participants will be selected to ensure a broad range of fields and backgrounds for the 2019 cohort. Special preference will be given to instructors adding sustainability to subject areas with a current lack of courses with sustainability content.

Applications will be accepted on a rolling basis until January 31, 2019.

All applicants will be notified of their status no later than March 1, 2019.
SUSTAINABILITY MINOR

THE SUSTAINABILITY, ENERGY, AND ENVIRONMENT FELLOWS PROGRAM (SEE FP)

FLEXIBLE AND INTERDISCIPLINARY
16-18 credit hours, and open to undergraduate students of all majors. Some SEE FP courses double-count for Gen Ed credit

SKILLS YOU CAN USE
Learn the metrics for measuring sustainability. Gain skills in cost-benefit analysis, life cycle analysis, and other methods for comparing technologies and development methods

DIVERSE PERSPECTIVES
Join a classroom of students representing majors from all across campus. You'll tackle problems in ways you never thought you could, combining ideas from your peers from different disciplines

GO HANDS-ON
Practice what you've learned through the Capstone Experience Course. Work with Fortune 500 companies, local governments, and nonprofit organizations to solve real-world sustainability challenges.

go.illinois.edu/SEE_fp

CURRICULUM

COURSES

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<thead>
<tr>
<th>COURSE</th>
<th>DESCRIPTION</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>ENVS 301: Tools for Sustainability</td>
<td>Open to students from all disciplines</td>
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<tr>
<td>Introduction to Sustainability</td>
<td>Choose one course from the following:</td>
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<td>ESE 200: Earth Systems</td>
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<td>GCL 210: Framework for Sustainability</td>
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<td>NRES 287: Environment and Society</td>
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<td>Economic / Policy / Social Dimensions</td>
<td>Choose one course from the following:</td>
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<td>ACE 210: Environmental Economics</td>
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<td>UP 460: Land Use &amp; Transportation Policy</td>
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<td>PS 225: Environmental Politics &amp; Policy</td>
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<td>NRES 425: Natural Resources Law &amp; Policy</td>
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<td>NRES 472: Renewable Energy Policy</td>
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<td>ESE 311: Environmental Issues Today</td>
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<td>LA 370: Environmental Sustainability</td>
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<td>ESE 482: Challenges of Sustainability</td>
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<tr>
<td>Environmental / Natural Systems</td>
<td>Choose one course from the following:</td>
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<td>CEE 330: Environmental Engineering</td>
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<td>IB 440: Plants and Global Change</td>
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<td>UP 405: Watershed Ecology &amp; Planning</td>
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<td>NRES 219: Principles of Ecosystem Management</td>
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<td>NRES 348: Fish and Wildlife Ecology</td>
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<td>NRES 429: Aquatic Ecosystem Conservation</td>
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<td>ESE 320: Water Planet</td>
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<td>ESE 445: Earth Resources Sustainability</td>
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<td>ENSU 310: Renewable &amp; Alternative Energy</td>
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<tr>
<td>ENVS 492: Capstone Course</td>
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<td>4</td>
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TOTAL HOURS
16-18
Now entering its second year, the Undergraduate Certificate in Environmental Writing is the perfect program for students wanting to learn about the latest environmental research on and how to effectively communicate that research to the public. Our motto is “Turning Data Into Narrative.”

Explore deep connections between nature and human lifestyles, then turn your findings into an in-depth professional piece of journalism!

• Open to students of all majors
• Best suited for juniors and seniors
• 3-course pathway (12 credit hours)
• Customize content to your interests
• Your work could be featured in the new Q Magazine

sustainability.illinois.edu/cew
University of Illinois students, regardless of major, can enroll in the Sustainability, Energy, and Environment Fellows Program — a campuswide undergraduate minor in sustainability that helps prepare them for careers in the corporate sector and with nonprofit organizations, government agencies, and environmental advocacy groups.

In the final piece of the minor degree, students will apply sustainability assessment tools, such as life-cycle analysis, cost-benefit methods and impact analysis to real-world problems related to sustainability to be developed in collaboration with capstone partners. Course activities are a blend of case study discussion, identification of problems, site visits, analysis, and a final report.

Our Partners Train and Inspire Future Innovators

The Capstone Experience could not exist without the cooperation of our campus, community, and corporate partners. Their proposed projects provide today’s students with the tools to tackle tomorrow’s challenges.

The SEE Fellows Program is constantly looking for new faculty and campus partners to expand our project offerings to students. Our team is excited to discuss potential partnership opportunities with you.

For more information, please contact us at see-fellows@illinois.edu

The Fellows Program, by the Numbers

- Now entering its fourth year.
- Almost 100 current Fellows or alumni, with significant program growth every year.
- Truly interdisciplinary - current majors include Mechanical Engineering, Graphic Design, and Agricultural Economics, to just name a few.
- Admission to the Fellows Program requires an application, ensuring all Fellows have the ability to tackle rigorous coursework like the Capstone Experience.

Learning in Action

Students benefit from real-world sustainability experience while project partners receive a concrete deliverable at the end of each semester.

Capstone projects that students completed in Fall 2017 included a feasibility study for biomass feedstock processing, a roadmap for behavioral change and energy conservation in office settings, and a review of sustainable development goals for a multinational corporation.

Current and former corporate partners for the capstone have included Accenture, Ameren Illinois, the U.S. Army Corps of Engineers’ Construction Engineering Research Lab, Chip Energy Incorporated, Johnson Controls, and The Land Connection.

Read past capstone reports at go.illinois.edu/SEEFP-Reports-2017.
Where the Buffalo Roamed, Disappeared, Now Roam Again

By Jenna Kurtzweil

Bronze looks strange on a bison. I regarded the sculpture before me with a mixture of awe and skepticism as I awaited my parents outside the Prairie State Grill. The restaurant was the first pit stop along my family’s road trip from Illinois to Arizona, and its mascot — the bison — loomed large and lifelike before my 8-year-old eyes. Built on a rapidly developing stretch of grassland, the greasy eatery boasted prime real estate with a Wild West motif to match.

Given the historic association between American bison and western imagery, the restaurant’s choice of mascot was not surprising. And although the tavern’s guardian was majestic in its own statuary way, it was a far cry from the buffalo that thundered through my imagination, and that had once dominated this prairie: While the creature’s nose appeared dewy with moisture and its flanks were chiseled to mimic flesh and bone, its hooves remained welded to the platform on which it posed, and even the most persistent summer breeze couldn’t ruffle its metalwork hide.

Something about seeing a bronze bison rather than its living counterpart upset me. A question haunted me on meeting the creature’s copper-plated gaze: How can we create restaurants dedicated to honoring bison while simultaneously destroying the creatures’ historic habitat?

An answer to this complex question demands an understanding of the bison’s checkered natural history. What, exactly, did the buffalo’s home look like? How did it feel to stand in this spot thousands of years ago, when bison reigned and the landscape wasn’t yet cloaked in concrete highways and fast food strip malls? I closed my eyes, pretending that the nearby traffic’s rumbling was the thundering of a thousand distant hooves. In my mind, I was on a journey to the distant past, a pre-industrial paradise of bison coexistence and ecological harmony.

But the bison’s role in the North American narrative is far muddier and more turbulent. While bison are largely perceived as quintessentially “American,” the species did not originate on the North American continent. DNA-based evidence uncovered in 2017 proves that the first bison migrated to North America 130,000 years ago via the Bering Land Bridge. Now fully submerged, the land bridge once connected East Asia to modern-day Alaska’s western coast.

Despite the variety of grazing megafauna already present in North America, bison thrived, increasing their range of distribution even as mammoths, ancient horses and giant sloths dwindled. Scientists today conjecture that the bison’s infiltration of the North American prairies is directly responsible — in conjunction with human involvement —
for the extinction of prehistoric megafauna. For this reason, the bison’s establishment in the Americas is technically classified as an invasion rather than a migration.

Contrary to popular myth, the bison’s transformative impact on the pre-existing American ecosystem is outdone only by the wave of destruction brought by humans thousands of years later. Following their North American invasion, bison spent millennia evolving and honing the necessary traits to retain dominance. At the 15th century’s close — just as Columbus made his historic landfall — North America housed upward of 30 million bison, distributed across the Great Plains from Idaho to Pennsylvania and up into Canada’s southern provinces. Although bison have been hunted for about 12,000 years, the Native Americans’ largely sustainable practices posed no lasting threat to the species’ survival. Similarly, wolves and grizzlies (the bison’s only natural predators) never made a significant dent in the population. It’s not hard to believe, then, that North American bison remained stable for millennia, and herds numbering in the millions trekked their circular migration patterns — spending summers up north and moving south for the winter — year after year.

Back at the Prairie State Grill, the nearby rumble of traffic lulled for a moment, and the silence jarred me back to my bison-free reality. People chattered inside the restaurant, the grasses whispered and waved, but nothing thundered on the plains. As my family motored west, sightseeing opportunities became limited to vultures circling overhead, the occasional anomalous rock formation, freight trains streaking along distant tracks, and, of course, the free-range cattle that roamed the prairies in droves. I could hardly believe that scarcely two centuries prior, bison populated the plains just as abundantly as beef cattle do now.

Evidently, early colonizers shared my incredulity, and equated the vast multitudes of bison herds with what they believed to be a boundless supply of resources available in the American West. They wasted no time in tapping these supposedly infinite riches. Along with the harvesting of corn, tomatoes, and potatoes from the New World, bison were coveted by European traders for their hides, meat, and various organs harvested in their own right.

The Nature Conservancy chronicles the catastrophic fallout of the European bison trade, highlighting the fact that “unlike the Native Americans who utilized virtually all of the bison … white hunters became extravagant and wasteful. Taking only delicacies like the tongue, they left tons of meat and hide to rot.” The number of slaughtered bison during this period was so astronomical it was said that one could “walk … 100 miles along the Santa Fe railroad right-of-way by stepping from one bison carcass to another.”

American settlers embraced bison hunting with such zeal that its status quickly shifted from trading commodity to popular recreation. A particularly gruesome hunting exercise involved targeting herds from the windows of moving trains: the thousands of bison gratuitously slaughtered in this manner were never used in any way.

This bison-hunting mania was further fueled by widespread white antagonism toward Native American tribes, when the colonists’ fervor for sport-hunting converged with a genocidal agenda. By purging the tribes’ primary food source, settlers were able to weaken and exploit the Great Plains native communities.

Eventually, these horrifying tactics, which began as carelessness and ended in pointed aggression, took their toll: Over the course of the 19th century, a staggering 50 million bison were slaughtered. In the biologically brief span of a single century, 12 millennia of population growth unraveled, and the creature that had outlived woolly mammoths and saber-toothed tigers was brought to its knees by humans with barely a second thought. At the turn of the 20th century, fewer than 600 bison resided in the United States, just over half of the world’s total population. In 1889, the American public faced the alarming reality that more than 99 percent of the world’s bison population had been eliminated since the days of Columbus and, as is often the case, imminent catastrophe proved highly motivating.
For better or worse, the bison’s scrape with near-extinction acted as the catalyst that transformed Americans from primary predator to staunch defender, even worshiper, of the bison. Beginning with the termination of commercial bison hide shipments in 1889, activist groups rallied around the creature that had been recently been destroyed so mercilessly. The American Bison Society was founded in 1905 with the mission of reviving the species, and a bison adorned the back of the American nickel from 1913 to 1938. Through a mixture of activism, legislation, and privately and publicly managed herds, the population climbed to the tens of thousands by 1935. The American Bison Society, believing its mission accomplished, was promptly disbanded.

Bison remain symbolic of western freedom in the 21st century. Currently, the U.S. is home to roughly 350,000 bison split between private and public herds, the largest population since 1889. The year 2005 was noteworthy on multiple fronts as it witnessed the reincarnation of the American Bison Society as well as the revival of the American Bison Nickel, and in 2016, President Obama introduced legislation establishing bison as the national mammal.

As time goes on, bison continue to be beloved by the American public and protected by increasingly strict laws. However, they remain alienated from the symbols of freedom that the original European settlers associated them with. Bison roaming today’s grasslands differ from their ancestors in terms of lifestyle, ranging territory, and even genetic makeup. During the species’ most drastic population shortage in the late 19th century, they were often bred with cattle by ranchers looking to stabilize profit margins.

Today, American bison have escaped the threat of extinction, largely because of human intervention and population engineering. Humans continue to exert their godlike powers of selection, but with the intent to preserve rather than to profit.

In Oklahoma’s Tallgrass Prairie Herd, for example, health and wellness data from the herd’s 2,500 bison are strictly monitored. While this close supervision is intended to protect, it showcases the meddlesome, even compulsive character of human intervention. It likewise prompts the unsettling question every environmentalist or mere bison-lover needs ask themselves: Is it that we humans can only operate in extremes — whipsawing from mass extinction of the bison to genetically optimized reintroduction in a few short generations — while ignoring all possibilities for retreat, to allow nature to take its course?

In the least flattering light, the bison’s reintroduction to the American prairie might be considered an egotistical effort to assuage our collective guilt and re-inhabit an idealized past. However, a less damning interpretation might acknowledge that in addition to providing us with a conservation “success story,” bison work wonders upon the American grassland. Bison are “selective grazers:” they gravitate toward dominant grasses, eating only those varieties that provide necessary nutrients, thus leaving less dominant species to flourish.

Additionally, bison are more sustainable grazers than cattle because they don’t eat grass completely to the ground, instead opting to shear off the top layer. This eating pattern allows the foliage’s lower levels to access more sunlight and results in the plain landscape’s close-cropped appearance. Early American explorer Meriwether Lewis commented to this effect in a journal entry dated July 17, 1806: “… the grass is naturally but short and at present has been rendered much more so by the grazing of the buffaloe, the whole face of the country as far as the eye can reach looks like a well shaved bowling green, in which immence and numerous herds of buffaloe were seen feeding … .”
This excerpt from the iconic diaries of Lewis and Clark not only acknowledges the bison’s ecological impact, but helps us imagine the historic prairie landscape with firsthand clarity. Perhaps the idealized image of bison herds blanketing green hills is not too far out of reach after all. The idea of reintroducing “buffaloe” to the grasslands in which they evolved is taking America by storm.

South Dakota’s Cheyenne River Ranch, run by Dan and Jill O’Brien, is a prime example of this agricultural shift. Having formerly managed beef cattle, the couple claims that their conversion to bison conserves resources that would otherwise have been devoted to keeping their herds well-fed and protected from the prairie’s harsh environment. While beef feedlots generate large quantities of chemical waste and non-organic contamination, the presence of bison on the prairie is virtually waste-free, proven to be sustainable through millennia of evolutionary refinement.

Speaking for a community determined to restore native creatures to native lands, Dan O’Brien passionately states that “what really needs to be out on the Great Plains...(are) the indigenous animals.” His powerful statement recalls the question that I agonized over at the Prairie State Grill: How can we justify displacing bison in order to construct bison-honoring restaurants, structures, and shrines? Bison imagery, it turns out, is not limited to restaurants at all, and can be found almost anywhere from the prairies across the plains: neon bison blaze down from billboards, while bison sculptures of every imaginable material — including bronze — populate antique stores. Even charming bison illustrations doodled cartoonishly on the fringes of menus are not uncommon, as my 8-year-old self can sheepishly report.

Bison, as at the Prairie State Grill, are both everywhere and nowhere. And how different, really, is the bronze bison from the herds roaming North America today, most of which wouldn’t exist without some form of human engineering? They are a form of “built bison,” sculpted not from bronze or copper, but from a collective human effort to restore that which was destroyed. Why do we do this? Is it a pure show of power, a deep yearning to return to the past, or a lingering unease about the fallout of American settlement? Perhaps it’s a combination of all three.

That said: Yes, the reintroduction of bison is an unparalleled victory of conservation, and the environment will be better for it. And yes, this reintroduction is being conducted entirely on our own terms. Celebration is definitely in order, but we must proceed with caution. After all, while bison might today appear docile to our uses, they are still descended from the heroic species that survived the Ice Age and outlived the woolly mammoths.

About the Author …

Jenna Kurtzweil is from Inverness, Ill. She is a senior English major at the University of Illinois. She hopes to pursue business or marketing writing in her future career, and she is passionate about the environmental and nonprofit sectors. This article was written for ESE 360, the introductory CEW course, in Spring 2018.

More about Q Magazine . . .

Q Magazine features outstanding articles by University of Illinois students enrolled in the Undergraduate Certificate in Environmental Writing (CEW), a joint venture of the Institute for Sustainability, Energy, and Environment (iSEE), the School for Earth, Society, and Environment (SESE), and the English Department.

When enrolled in the CEW capstone course (ESE 498), students have the opportunity to submit their work for publication in Q, working closely with instructors and production staff to develop their work to a professional, publishable standard. The motto of the CEW is “turning data into narrative” — to learn about the latest scientific research on the environment and how to communicate that research effectively to the public.