GECS Capstone Project Ideas

In Conjunction with the Office of Sustainability

**Green Labs:** Research laboratories have a significant environmental footprint on college campuses. On average, lab space requires five times more energy than an office of the same size, plus labs generate substantial hazardous and non-hazardous wastes. The good news for researchers is that there are many steps that can be taken to reduce a lab’s environmental impact. This project aims to identify opportunities for making laboratories on the Homewood campus, and perhaps other campuses as well, more sustainable. Tasks will include researching green laboratory practices at other universities, inventorying equipment and devices that are significant energy consumers, developing and implementing behavior change programs for employees and students, engaging with and educating laboratory personnel, and evaluating laboratories to assess impacts from administered programs.

**Community Based Social Marketing Energy Campaign Research and Development:** This student will employ the framework of CBSM theory to researching various energy conservation-related behaviors by a particular audience on campus – student, faculty, and/or staff – and develop a marketing campaign that directed at encouraging key behavior changes among the specified group(s). This will include identifying key behaviors and desired behaviors; assessing barriers and benefits that help encourage or hinder those actions; branding the campaign and developing various communications materials and resources; and disseminating materials through appropriate channels.

**Sustainable Literacy:** As AASHE notes, “Sustainability literacy is a topic of increasing interest among a growing number of higher education sustainability staff and faculty. Formal education programs and courses that address sustainability are becoming increasingly common. However, there currently exists no standardized tool or method to assess the sustainability literacy of students.” This student will research methods being utilized at institutions across the country to measure student engagement and literacy on numerous facets of sustainability. In the end, the research conducted will help inform potential protocol for evaluating literacy of the JHU student body when entering and departing the university.

**Sustainability Across Curriculum:** This project would focus on researching various types of curriculum development workshops and efforts to integrate sustainability widely across higher education curriculum. Exploring existing formats and assessing results and success, evaluating faculty and student expectations, concerns and desires for, and considering opportunities for JHU within the context of new student recruitment (i.e., more students consider a school’s environmental efforts AND academic offerings relating to sustainability when selecting their institution) would be key components of the project, culminating in a concept proposal for wider integration of sustainability education across disciplines university-wide.

**Other study topics:**
Opportunities/challenges pertinent to JHU based off Governor O’Malley’s Maryland Climate Change Plan and goals
Impact of cool roofs on urban heat island effect
Urban Stormwater management
The effects of living walls and green roofs on GHG
Black-water and gray-water treatment and reuse on campus
Anaerobic and aerobic composting scalability
The Net Zero building
A comparison of the 3-4 most common building rating systems (LEED, Green Globes, etc.)
Transportation and Sustainability
Socially conscious investing
How will we be making electricity in 2050?
How to engage the poor and the affluent in sustainability efforts
Can Methane and biogas replace natural gas?
What does climate change mean for the populations that live within 20 miles of the coastline?
Sustainability and the global jobs market
Global polluters, local laws
Identifying the true costs of energy types when externalities are factored in

Other Possibilities

All GECS-relevant internships and other student opportunities are posted at http://E2SI.jhu.edu/opportunities
Students can sign up on this website to receive an email or RSS alert when new content is posted.