Abstract & Objectives
Integrating Sustainability Across the Curriculum (ISAC) pairs Penn students with Penn instructors in a collaborative effort to incorporate sustainability topics into Penn courses. As an ISAC intern, I worked alongside Professors Andrew Huemmler and Alain Plante to revamp and design their respective courses: Climate Policy & Technology and Principles of Sustainability Science. An initial task of mine was to develop concise objectives for each course:

Climate Policy & Technology
• Identify available and developing strategies and technologies for mitigating anthropogenic climate change.
• Analyze economic, political, and social hurdles associated with the implementation of these strategies.
• Discern between those strategies which are currently viable and those which require ongoing research and development.

Principles of Sustainability Science
• Characterize sustainability science as a unifying discipline centered on the analysis of interactions between complex human and natural systems.
• Develop tools and methods for quantifiably measuring sustainable progress.
• Apply systems modeling techniques to selected topics in sustainability and identify how these models enhance students’ understanding of sustainability science.

Week Day Topic
1 Tues. Course Introduction: Defining Sustainability
2 Thurs. Sustainability Science: An Emerging Discipline
3 Tues. UK’s Sustainability Science: An Emerging Discipline
4 Thurs. Sustainability Science: An Emerging Discipline
5 Tues. Sustainability Science: An Emerging Discipline
6 Thurs. Sustainability Science: An Emerging Discipline
7 Tues. Sustainability Science: An Emerging Discipline
8 Thurs. Sustainability Science: An Emerging Discipline
9 Tues. Sustainability Science: An Emerging Discipline
10 Thurs. Sustainability Science: An Emerging Discipline

In addition to replacing outdated course materials, my work also entailed synthesizing new materials. These materials were generally PowerPoint presentations or brief reports about topics which Professor Huemmler wished to incorporate more soundly into his course. Some examples of these topics include alternative fuels, the Kyoto Protocol’s visualization of these interacting systems.

Unlike Principles of Sustainability Science, Climate Policy & Technology is already an existing course at Penn. Hence, my work with Professor Huemmler focused on top-down restructuring rather than bottom-up construction. The primary focus of this restructuring was updating course content in a manner that reflects current strategies and technologies to mitigate climate change. In the past few years, there have been great strides in both mitigation technologies and policies discussed in this course. In contrast, other technologies and policies in the course have become obsolete or have been rendered ineffective. Through reading industry reports, academic journal articles, and attending outside conferences, I eliminated several outdated materials and added comparable new materials which reflect current standards and technologies.

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For Principles of Sustainability Science, my primary research material was Bert J.M. de Vries’ Sustainability Science, a textbook which uses a system dynamics perspective to unify sustainability theories across the social sciences and the natural sciences. In addition to de Vries, I utilized numerous academic journal articles, conference papers, video lectures, and sustainability course syllabi from other universities.

For Climate Policy & Technology, my research materials primarily included academic journal articles discussing anthropogenic climate change, mitigation strategies, and energy technologies. To cover the policy portion of the course, I also incorporated several industry reports, energy use forecasts, government documents, and environmental action plans.

PROVIDE
Discuss weekly findings with professors. Provide my student perspective regarding course design, course difficulty, assignment feasibility, and the clarity & usefulness of readings.

ANALYZE
Prepare oral and/or written summaries about pertinent resources, their contents, and their applications. Extrapolate from these resources to make suggestions about course goals, structure, and content.

ORGANIZE
Eliminate assigned course materials which are not useful or have superior substitutes. Categorize readings according to similar uses or subject matter.