# Integrated Sciences First-Year Program

## NS – 132 Sustainable Water Use / Reuse

Students will focus on the "Net Zero" water systems within the Kern Center Living Building. We will explore the cycling of greywater through the wetland systems within the building using a systems approach. We will learn methods for measuring water quality and quantity. Basic topics will include the hydrologic cycle, biogeochemical cycles, greywater recycling, and stormwater reuse.

## NS – 140 Modeling Systems

Students will focus on using mathematical models to understand the water and energy systems in the living building. We will learn what mathematical models are and when, why, and how to analyze them. We will then build simple models of systems in the Kern Center including the cycling of nutrients in the indoor planters and the energy production by the solar panels.

## NS -143 Designing a Net Zero Building

Students will assess how the Kern Center is meeting the Living Building Challenge "net zero" energy requirement, which requires the building to generate all the electricity it uses. Students will learn about electrical power and energy, solar photovoltaic systems, energy efficiency features of modern buildings, and behavioral strategies for conserving energy. Student work in this class will help ensure the Kern Center achieves Living Building Certification.

The Integrated Sciences First-Year Program (ISFP) is a new initiative at Hampshire College designed to challenge students to learn about complex systems and systems thinking, improve quantitative skills, make connections among fields of science, develop innovative collaborative projects, and create a vibrant science community. Currently the program is using the Hampshire College Kern Center, built to the living building challenge standard, as a case study. There are three parts to the program: collaborative courses, student design projects, and a summer research experience.

To join the program please register for one of the three listed collaborative courses. Students will meet twice a week to explore the science behind the systems of the living building in their specific discipline. Once a week all three classes (NS132, NS140 and NS143) will meet together to complete interdisciplinary projects, share expertise, and form a collaborative science learning community. Students will read and share primary literature and work collaboratively on projects. We will learn about the campus living building from the architects and design engineers, take field tours, and meet faculty across campus engaged with the project.

For more information, please contact:
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