



Multi-course Research Project Engages



Interdisciplinary Research



Dr. Juliet Johnston

Hampshire College, Amherst MA



Research requires interdisciplinary collaboration, but students rarely have projects that are interdisciplinary or are larger enough span multiple courses or semesters. This pilot project gives students multiple opportunities to contribute to novel research to enhance their education.



Fall 2025 Courses

Spring 2026 Courses

The key research question:
How does the graywater's abiotic and biotic features impact plants and soil health?

Graywater Independent Study: Plant Biology
Experiment with plant growth from sterile/non-sterile graywater

General Chemistry
Soil chemistry analysis as final project

Microbes on the Farm
Plant-fungal interactions

Graywater Independent Study: Metagenomics
Metagenomic analysis of problematic graywater fungi

Bioinformatics: Community Analysis
16S and 18S analysis of soil microbial community



The key research question:
How can we reuse and remediate graywater?

Graywater Independent Study: Bioreactors
Design and build bioreactors to treat graywater

Environmental Engineering Principles
Treat graywater using bioreactors and constructed wetlands



Thanks to the Hitchcock Center for the Environment and the RW. Kern Center for their graywater. Thank you to the farm staff, Dr. VanWyk Sarah Steely, Willow Coville for helping with plant propagation. Thank you to ASEE EOP for the funding and KBase Educators Project for sequencing

"It definitely made the class feel more practical and real" – Several students Overall, students love the idea (so far) but some struggle since this project isn't *their niche* and want more options on a similar throughline for their area of study. Some want it to be a bigger part of class and not just final projects.