PRINCETON WEEKLY BULLETIN

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By the numbers

"Engineering Projects in Community Service"

Princeton NJ — University students are assisting local homeowners in optimizing energy conservation in their homes as part of a class called "Engineering Projects in Community Service." The students have partnered with the Stony Brook-Millstone Watershed Association to test homes throughout the area to determine their "ventilation rates" — essentially their level of draftiness — and design "green retrofitting" strategies while preserving adequate ventilation. The course, now in its second year, is administered by the Center for Innovation in Engineering Education.

From left, junior Emily Weissinger and freshman Yin Liang measure a local home's ventilation rates as part of an "Engineering Projects in Community Service" course that is focused on helping homeowners optimize energy conservation. (photo: T. Kevin Birch)

- This semester, the "Greentrofit team" includes 12 students, ranging from freshmen to seniors, who are majoring in a variety of disciplines, including engineering, philosophy and geosciences. The team is advised by civil and environmental engineering professor Catherine Peters.
- Each ventilation test, lasting two to three hours, is conducted by a pair of students. The team, which began its work in November, is slated to assess 40 homes by early March.
- The students assess ventilation using a blower door test, in which a variable speed fan is fit into the opening of a home's front door. After closing all exterior doors and windows and opening all interior doors, the fan is used to blow air out of the house. The amount of air flow required to cause the interior pressure to drop indicates how leaky the house is. The students use a thermal imaging camera to document areas of significant leakage.
- The students also analyze each home's energy bills for the past year. Based on the information gathered, they make recommendations to reduce energy costs while maintaining indoor air quality, such as taking further measures to seal up the house or installing a heat-recovery ventilation system. All homeowners are provided with a report that includes the air exchange rate for their home and the estimated cost of air leakage, along with an explanation of how this compares to U.S. standards for health and energy efficiency.

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