Engineering experiences outside of the classroom:

Whether they come in the form of Villanova Engineering Service Learning (VESL) projects or trips, STEM outreach participation, or extracurricular endeavors like the Steel Bridge team and Nova Racing, experiences outside of class help students grow professionally and personally.

Dean Gabriele seeks to provide every engineering student with an engineering related service-learning experience before graduation. He notes, “In many professions, the engineer rarely has an opportunity to interact with customers. These experiences allow students to see for themselves the impact of their work.” Through service learning projects and VESL site visits, students also learn that nothing is “just” an engineering problem. There are cultural, political, environmental and economic factors at work in even the most everyday things.

Currently, about 45 percent of students have a service learning project and/or on-site experience before graduating. Gifts to the campaign can help the dean reach his goal of 100 percent participation. An update on campaign gifts to support the VESL program can be found on Page 35.

Dean Gabriele adds one final element to this student-centric equation: “With people and programs comes a need for new and exciting places. We need space for students to innovate, experiment, research, study and gather in community.” With that in mind, expansion of the Center for Engineering Education and Research (CEER) is perhaps the most important element of the campaign.

Where Do We Go from Here?

With the financial support of the campaign, the College will be in a position to build upon its already firm foundation. “As we evolve, we have the Villanova advantage,” says Dean Gabriele. He points to the University’s emphasis on community, including the faculty and student connection, which is part of the culture. “We are in an environment that supports this student-centric vision,” he says. Villanova’s size is another plus. “We are not too small that we can’t try different things, and not too large that the possibilities for innovation and change are overwhelming.”

Perhaps the University’s greatest strength, however, is its supportive alumni base. “They share our story. They get involved,” says Dean Gabriele. “We know alumni are excited about our vision for the future of the College, and our desire to make them proud helps propel us onward and upward.”

FOR THE GREATER GREAT: The CEER Expansion

A gift from Denise and John Paul ’65 ME Janitz will establish a new Learning Commons in CEER. Students will flock to this 4,600-square-foot communal atrium to study in groups, work on seminars and guest lectures.

A gift from Alfreda and John Janitz ’65 ME Janitz will fund the Janitz Family Dean’s Suite. Part of the Engineering Hub, the Dean’s Suite will accommodate College administration and staff, providing a professional environment for welcoming everyone from prospective students to industry representatives. The Hub also will free up valuable classroom and laboratory space that currently is being used for offices.

PROFESSOR’S RESEARCH FEATURED IN LEADING CHEMISTRY JOURNAL

V illanova University Assistant Professor Rees B. Rankin, PhD, Department of Chemical Engineering, is a co-author of “Elucidation of Pathways for NO Electrodeposition on Pt(1 1 1) from First Principles.” Appearing in the July 6, 2015, issue of Angewandte Chemie International Edition, a prestigious chemistry journal published in Germany, the article is certain to gain significant visibility throughout the chemistry and catalysis communities. Widely read by European scientists, Angewandte Chemie is recognized internationally as a leading source of critically selected research findings and current research trends.

In addition to the honor of being selected for review, the study also was featured on the journal’s cover.

Reflecting his interest in environmental remediation and the sustainable production of commodity chemicals, Dr. Rankin began the research that led to this article about two and a half years ago as a postdoctoral fellow at Purdue University. Working with his advisor Jeffrey Greeley, PhD, graduate research assistant Hao-Joon Chen; and Dr. Andre Clayborne of the University of Jyväskylä, the goal of this study was to find a mechanism for converting nitric oxide (NO) to ammonia (NH3). A chemical pollutant, NO affects oxygen supply in the atmosphere and bodies of water, and contributes to the formation of acid rain. Conversely, NH3 offers environmental benefits as a fertilizer and commodity chemical, which otherwise requires a tremendous amount of energy to create. “Considering how important, or to be more specific, deleterious, nitric oxide can be in an environmental context, it amazes me that no viable technologies exist to mitigate it, particularly with respect to the quality of our water supply,” says Dr. Rankin.

In the article, the authors offer a new, detailed mechanistic approach for understanding the reduction of NO on single crystal platinum surfaces. The next step will involve investigating more abundant and less expensive metals that can possibly facilitate the desired reaction. Dr. Rankin says, “I hope that the results from this study will be used to develop more efficient and more sustainably based catalysts for nitric oxide electrodeposition in the future. Our environment depends on it.”

Dr. Rankin’s et al., research was selected for the front cover of Angewandte Chemie International Edition.