How are these for first-year chemical engineering challenges? Restore water from a polluted river to drinking-level quality. Turn French fry grease into biofuel that can power a bus. Make an artificial hip immune to rejection by coating it with a biocompatible film of uniform thickness—1.20 millimeters, to be exact.

Real-world problems like these are nothing new to Northeastern students. But lab experiments that mimic such challenges have grown a lot richer—and more fun—thanks to the latest philanthropic contribution from William DiPietro, E’42, to the Department of Chemical Engineering. Last fall, DiPietro financed the installation of state-of-the-art equipment, including computer hardware and software upgrades, in the department’s Unit Operations Lab.

This lab is to the chemical engineer as the kitchen is to the chef. Here, concepts common to all chemical industries come alive, as do fundamental laws governing physical changes, such as the transfer of heat and mass. Students use processes like distillation, crystallization, and evaporation to transform matter, often in ways that don’t quite match textbook predictions.

DiPietro’s gifts have accelerated students’ learning. “Using equipment that rivals what they see in industry on co-op, students now spend more time analyzing and using data, and less time gathering it,” says Katherine Ziemer, an associate professor of chemical engineering. “Curricular innovations made possible by Bill’s generosity add real-world complexity to classroom lessons.”