



PHOTOS COURTESY: UMD CONCRETE CANOE

IT WAS ON HIS ADMISSIONS TOUR THAT CRAIG LAMPMANN ('15 CIVIL ENGINEERING) FIRST SAW THE CONCRETE CANOE TEAM, WHICH HE LATER JOINED AS A FRESHMAN. By his senior year, he had risen in team ranks to co-project manager, and the UMD team's 2015 canoe *Seabiscuit* won the American Society of Civil Engineers Mid-Atlantic Regional Concrete Canoe Competition before competing at nationals.

"It's less about the canoe," says Lampmann, "and more about the critical thinking required to build something so impractical." The cement mix and canoe mold are just the beginning. The biggest

hurdle: keeping the team together and working toward a common goal. This challenge takes leadership and time management skills, which Lampmann uses daily as a field engineer with Whiting-Turner, where he manages job site subcontractors, safety, and quality control.

The concrete canoe competition has long helped to build a strong cadre of committed alumni leaders like Lampmann, who has visited with current team members to provide guidance on mix and practice pour days and to discuss fundraising and team building. This year's team? "Well on their way," he says.



UMD STUDENTS COMPETE IN THE CONCRETE CANOE COMPETITION.

Building Efficiency, Sustainability—and Maryland Pride



PHOTO: JOHN DE LA ROSA/U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

THE UMD TEAM TOOK SECOND PLACE OVERALL IN THE 2017 SOLAR DECATHLON.

Passionate about efficiency? Yes. Fearless? Yes.

Mechanical engineering student Paige Andros was a perfect fit to serve as student project manager for the University of Maryland's entry in the 2017 U.S. Department of Energy Solar Decathlon, called resilient Adaptive Climate Technology (reACT).

Team reACT used indigenous knowledge systems to minimize—and rethink—waste, from lost heat to wastewater. Innovative house features include modular construction, a GreenCourt (a marriage of a greenhouse and a courtyard), gardens for food production, a mechanical core, and a solar attic that uses the sun to heat water, dry clothes, and cook food. "People went crazy for the solar dryers," says Andros, who explained that the number one energy waster in a house is heat.

The team's broad range of disciplines helped diversify the house's many innovations. Doctoral student Alan Uy ('09, M.S. '17 chemical and biomolecular engineering) and the engineering team incorporated self-monitoring analysis and reporting technology so the homeowner can manipulate settings for efficiency. Focusing on energy modeling and automation, Uy began accumulating local weather data a year before the contest. A compilation of the modeling efforts, called the Virtual Solar Home Project, can be found online at reactvirtual.eng.umd.edu.

Raymond Adomaitis, professor with the Department of Chemical and Biomolecular Engineering and Institute for Systems Research, served as engineering faculty advisor to team reACT. "Solar Decathlon gives students a practical understanding of where their technological education is leading them, of what design means for professionals." This year's ambitious design led the team to another big win: achieving net

zero (energy production equal to its energy consumption), the scientific equivalent of waste not, want not.

Together, UMD students and faculty, along with committed alumni and industry sponsors, built more than an innovative house; they delivered on the university's land-grant mission of service by inspiring the next generation of energy experts—and inspiring Maryland pride. "If we can achieve net zero on campus, this technology is much more broadly applicable," says Adomaitis.

reACT is the university's fifth entry in the competition. UMD won the Solar Decathlon in 2011 and placed second in 2007. The winning 2011 house, WaterShed, was purchased by the regional electric service provider Pepco and converted into its Sustainability Center. Eager to share their expertise on energy and water efficiency and the built environment, Maryland's team hopes reACT will be used to educate students and the public about sustainability practices every one of us can implement, right in our own homes and gardens.



PHOTO: JOHN T. CONSOLI

UMD STUDENTS WORK AT THE REACT CONSTRUCTION SITE.