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New CE Degree Goes Green

By Catherine A. Cardno, Ph.D.



The University of California, Berkeley is about to graduate the first class from its Energy, Civil Infrastructure, and Climate (ECIC) program, one of a small but growing number of civil engineering programs that offer specialized degrees in sustainable engineering. Courtesy of Steve McConnell/UC Berkeley
A new energy, civil infrastructure, and climate program at the University of California, Berkeley, is ready to admit its second class and graduate its first.
January 17, 2012—The University of California, Berkeley's Energy, Civil Infrastructure, and Climate (ECIC) program—the seventh graduate program in civil and environmental engineering to be established at the university and one of a small number dedicated to graduating civil engineers who are specifically prepared to combine the principles of sustainable development with the principles of civil engineering—will graduate its first students this semester. The application process for the second class is currently under way and the number of enrolled students is expected to double after just one year, growing to 15-20 from an initial class size of 8. The program, which admitted its first students in August 2011, is one of a small but growing number of university civil engineering programs that offer specialized degrees in sustainable engineering.

According to James J. O'Brien, Jr., P.E., M.ASCE, ASCE's managing director for professional and educational activities, "Civil engineering students are looking for ways to make a difference in the world." He wrote, in response to written questions emailed by Civil Engineering magazine online, that civil engineering students "are ready and willing to take on new and developing fields to make our world more sustainable. They want to make a difference."

The program at the University of California, Berkeley, is led by Arpad Horvath, Ph.D., M.ASCE, a professor in Berkeley's civil and environmental engineering department; he is also the leader of the university's engineering and project management graduate program and the director of the university's Consortium on Green Design and Manufacturing. According to Horvath, over the last 10 years there has been a significant and steady increase in graduate applications to Berkeley's civil and environmental engineering department that have demonstrated an interest in the energy, greenhouse gas, water, and air emissions implications of civil infrastructure. The department's creation of the ECIC program responded to that interest—which was previously met by a variety of individual classes—and has built a "lasting community of like-minded students," Horvath wrote in response to written questions. "The ECIC program builds a solid base of sciences, engineering, and policy for the students upon which they can build careers in industry, government, or academia," he says.

According to the program description (www.ce.berkeley.edu/programs/ecic), the graduating students will be able to analyze—from multiple perspectives—such complex problems as the energy efficiency of buildings, the environmentally informed design of transportation systems, the embodied energy of construction materials, and the available electricity from renewable sources and biofuels. Graduates will also be able to address such societal problems as the mitigation of greenhouse gas emissions and adaptation of infrastructure to a changing climate.

"Training the current, as well as the next generation, of civil and environmental engineers in the methods and tools of sustainable engineering is extremely important," Horvath says. Civil and environmental engineering decisions have a "tremendous impact" on the natural environment, he notes, and "civil and environmental engineers have to become ever more a part of the solution."

Horvath says that with knowledge and persistence the students graduating from the program "will keep civil and environmental engineering an exciting profession and

make infrastructure not just beneficial for modern societies, but also part of the sustainable solutions that the world desperately needs.”

Berkeley's graduate program in civil engineering and its graduate program in environmental engineering were both ranked first in 2012 by U.S. News and World Report ([Click here](#) to see.).

O'Brien notes that this effort by Berkeley and others by similar institutions dovetails with two important ASCE initiatives. The [Civil Engineering Body of Knowledge for the 21st Century](#) makes the point that civil engineering professionals “must be able to apply principles of sustainability to design in traditional and emergent engineering systems.” He also notes that the ASCE [Vision for Civil Engineering in 2025](#) “paints a vision for civil engineering” that embraces the concept that engineers are entrusted by society to create a sustainable world and enhance the global quality of life.

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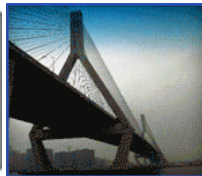
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