## ENERGY SUSTAINABILITY FOR THE 21ST CENTURY

Just five years ago you might have had a hard time defining "sustainability." Today, with California's energy crisis, redefining energy-efficient and environment-friendly planning and building techniques has become a necessity.

To meet this challenge, a sustainable society fulfills present needs without compromising the ability of future generations to meet their own needs.

"For several years the College of Architecture and Environmental Design (CAED) has offered courses in sustainable environments, concentrating them into a minor last fall," says Dean Martin Harms. "It's one of the few programs of its kind in the country. Enrollment in the course package is increasing steadily, reflecting the popularity of its fundamental mission–to promote holistic thinking across related disciplines around the concept of sustainability."

The CAED's City and Regional Planning Department is fostering a global perspective to help solve California's and the world's growing problems with appropriate and sustainable design. "The foundation of our teaching is built upon three fundamentals: an area's environmental, social, and economic components, and how they interrelate to sustain healthy communities," says Professor Paul Wack. "Students learn efficient land-use methods that don't overdraft water supplies, that support varied transit systems, and that provide a fair allocation of resources and services to all segments of society." The number of sustainable communities is growing, and Wack believes this is being accomplished "not only with today's decisions, but by teaching future planners to think seven generations ahead."

Energy-saving decisions early in a project's development can produce long-term benefits for occupants. "In the Landscape Architecture Department we show students the value of solar orientation for passive heating and how natural air movement can be enhanced," says Professor Walter Tryon. "Important things such as encouraging appropriate siting and the use of native plants reduce water, maintenance, energy, pollution, pesticides, and cost, while benefiting our health."

Prior to the current energy crunch, members of the CAED created the Renewable Energy Institute in 1984 and The Sustainable Environments Emphasis Group in 1993. Both include interdisciplinary collaborations with other colleges, including Agriculture

(Photo by Patrick Swaddener)

Professor Margot McDonald (center), co-director of the CAED's Renewable Energy Institute, and CAED students Dan Nickerson and Iris Chan measure energy-efficient design techniques with reading produced by a rooftop "thermal box" provided by the Harold and Evelyn Hay Endowment.

**1989**

On Dec. 10, Cal Poly students enter aviation history with the first certified flight of a human-powered helicopter, the *Da Vinci III*.

**1990s**

Students produce high-quality foods in the Cal Poly dairy science lab.

and Engineering. Architecture Department Professor Brian Kesner notes, "In all our teaching, research, and community service work, we promote a balanced solution of ecological, social/economic, and built-environment objectives by integrating the knowledge of human and natural systems."

Well ahead of trends, for decades graduates of the CAED's Architectural Engineering Department have been designing structural systems that "maximize strength using minimal materials and assets," says Instructor Damon Ho.

In the Construction Management Department, students learn to preserve assets by calculating the "life-cycle cost" of a building site. "This often means spending more initially on materials to generate substantial savings throughout the expected life of a project," observes Professor Bill Epstein.

A new project on the horizon is the Applied Research and Learning Center. With the help of private support, the CAED plans to establish a new learning environment in which curriculum and research overlap–a "one-stop" facility to house interdisciplinary collaboration among the college's five departments. Such a center will provide economies of scale and new opportunities to advance sustainability throughout the 21st century.

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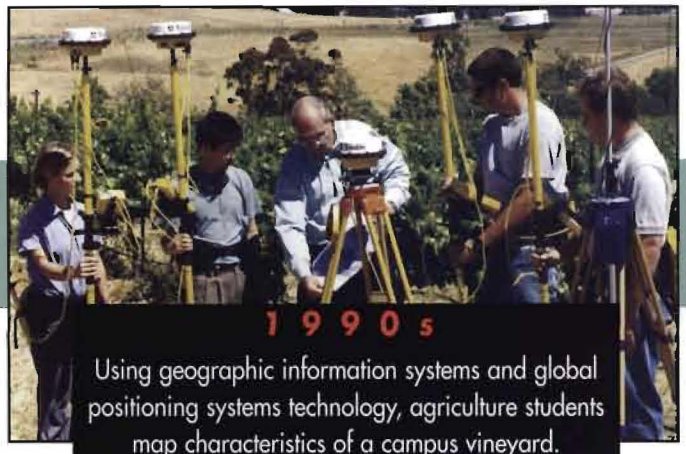
## Building on the Past, Designing for the Future

From the first classes in "machine, architectural, and original design" in 1903 to today's rigorous curriculum, Cal Poly has remained committed to its founding learn-by-doing philosophy through its College of Architecture and Environmental Design (CAED). The faculty–drawn from both professional educators and practicing professionals of the built-environment industry–are dedicated to educating the next generation of men and women to plan, design, construct, manage, and preserve the physical environment.

The CAED comprises five departments: City and Regional Planning, Architecture, Landscape Architecture, Architectural Engineering, and Construction Management. Integral to their development and success has been an ongoing commitment to multidisciplinary teaching, involving all of the professions that create and construct the built environment. As a result, graduates are not only effective planners and designers, but are also well prepared for the actual complexities of professional practice and construction in the field.

Today, with nearly 1,700 students enrolled and nearly 8,000 graduates, the CAED is one of the largest programs of its kind in the nation. Admission is highly competitive, with only one in four qualified applicants selected. The undergraduate programs in each department and graduate programs in architecture and city and regional planning send out high-quality, thoughtful, applications-oriented graduates, creating built-environment professionals who will shape the towns, cities, and open spaces of the 21st century.

The future will see more efficient, alternative project deliveries and design solutions in a rapidly changing global environment. There is no stronger foundation for CAED students to handle such a task than by remaining true to the Cal Poly approach to education: application-oriented and cooperatively multidisciplinary.



**1990s**
Using geographic information systems and global positioning systems technology, agriculture students map characteristics of a campus vineyard.

**1990s**
Students experience the joy of graduation.