During 2002 Cal Poly continued to dedicate itself to the mission at the heart of its educational enterprise: providing a distinctive, hands-on, polytechnic experience to the excellent students it attracts and graduates.

Cal Poly made progress in five targeted areas: supporting students, supporting faculty and staff, enhancing learning, developing campus facilities, and improving instructional technology and the library.

In this section we have selected a few examples in each category that were initiated or expanded in 2002, including:

- **Student support**: the Cal Poly Scholars Program and the university’s scholarship/internship program
- **Faculty/staff support**: new faculty hired and endowed positions filled
- **Enhancing learning programs**: the Gallo/Cal Poly vineyard partnership, an unprecedented undergraduateembryology lab funded by the student-voted College-Based Fee Initiative, and community-service opportunities and course credits for students
- **Enhancing campus facilities**: campus construction projects, including a new engineering facility and student housing
- **Developing instructional technology**: studio-classroom teaching.
Supporting Students

The Cal Poly Scholars Program

Cal Poly statistics major Rudy Angeles tutors students in calculus and serves as a grader for a statistics course. He plans to be an engineering consultant, focusing on biopharmaceutical research, or pursue a doctorate in statistics or mathematics.

Mika Sullivan chose to attend Cal Poly after being accepted at UC San Diego, UC Santa Barbara, UC Santa Cruz, and UC Davis. She is a business major in the Orfalea College of Business, interested in global law.

Mark Gabel was accepted at UC Berkeley but came to Cal Poly to study computer science and computer engineering. He plans to enter the College of Engineering’s "4 + 1" program to earn a master’s degree in five years.

All three of these students are National Merit finalists. And all three are Cal Poly Scholars.

Rated the No. 1 public, comprehensive undergraduate university in the West by U.S. News & World Report for the tenth consecutive year in 2002, Cal Poly drew more than 24,000 applicants for about 3,600 spaces. One way it competes with other respected institutions for America’s most gifted students is through its Cal Poly Scholars Program, which provides $8,000 in annual support per student.

All Cal Poly students and faculty benefit from the program. Cal Poly Scholars stimulate classmates to more creative achievement, assist on faculty research projects, lead teams to victory in academic competitions, tutor fellow students, volunteer in community programs, and provide inspiration to the university community through profiles in campus publications and attendance at presidential events.
Supporting Students

Bob Leach: One Person’s Power

Bob Leach is on a mission for Cal Poly. He’s demonstrating the same energy he used when he was twice titled an All-American and national record holder in swimming.

It’s the same energy he showed as senior vice president at Cadence Design Systems – helping to lead Cadence’s impressive growth as the electronic design automation industry’s first full-line consulting services provider – and as partner-in-charge of Andersen Consulting’s (now Accenture) electronics consulting effort.

And it’s the same dedication he called upon to promote Cal Poly as a major source of new hires for Andersen, to personally fund the Andersen Outstanding Junior Awards in Cal Poly’s Industrial Engineering and Mathematics departments, to help establish support for Cal Poly’s joint business/engineering master’s program, and to serve with the President’s Cabinet and the College of Liberal Arts’ Centennial Campaign board.

Leach’s personal mission now is his support of current and future Cal Poly students through a series of donations to the Cal Poly Scholars Program. He and his wife, Maggie, have pledged gifts of $18,000 per year for the next five years to the Cal Poly Scholars Award in the College of Liberal Arts, for a total of $90,000.

Now they challenge all Cal Poly alumni and friends to add their contributions to the program.

*The response envelope inserted in this Annual Report 2002 provides a section that can be checked for a Cal Poly Scholars Program gift to any college at the university.*
Supporting Students
Scholarships, Internships Provide Educational Funding, Hands-On Experience

In 2001-2002, environmental horticulture science major Corwin Graves was one of the many Cal Poly students — 57 percent — who received a total of $65 million in financial aid.

Of this total, 59 percent of all aid awards were student loans; 30 percent were federal, state, and CSU grants; and 1 percent was federal work study. Only 10 percent of financial aid was for scholarships, and of this amount only 18 percent was privately funded.

To provide the gift of a Cal Poly education to more students, the university is especially committed to expanding private support of its scholarship and internship programs.

Scholarship gifts are held in trust and administered according to the donor’s wishes in three main areas: need-based, merit-based, and (the primary award) need- and merit-based. These awards strengthen Cal Poly’s advantage in both recruiting and retaining exceptional students.

Internships provide practical work experience that reinforces the academic curriculum, enabling students to work on special faculty projects, participate in community or governmental agencies, or gain direct industry experience in a career-related field, as Corwin Graves has.

"Through my experience in Cal Poly’s internship program," Graves says, "I have been able to examine on a small scale how the horticulture industry operates. And," he adds, "I've experienced the types of responsibilities I will have when I graduate."

For more information on making tax-deductible gifts to the Cal Poly Scholars and Cal Poly scholarship/internship programs, contact the Scholarship Giving Office, Advancement Programs, Cal Poly, San Luis Obispo, CA 93407 (phone 805/756-6553 or toll free 877/727-7659); e-mail scholarschip-gifts@calpoly.edu; or visit the Web site at http://giving.calpoly.edu/.
Cal Poly saw the continuing expansion of a new generation of faculty with the hiring in 2002 of professors for a variety of colleges, departments, and specialties.

Among the new faces on campus are a specialist in poultry science, an expert in business management systems, a mechanical engineering expert in heat transfer and thermodynamics, and a political science professor who has written and taught extensively on public policy.

Elizabeth Koutsos (College of Agriculture) was appointed to the Foster Farms Professorship in Poultry Science. The new position is supported by the college and by Foster Farms, the largest poultry company in the western United States. Koutsos has served as a research associate in the Avian Immunology/Nutrition Laboratory of the UC Davis Animal Science Department, and collaborated with researchers at the Washington National Zoo Nutrition Laboratory, the Maryland Egg Council, the San Diego Zoo, and Pfizer Pharmaceutical Co.

Rosemary Wild (Orfalea College of Business) teaches MBA and undergraduate classes in management information systems, database management systems, quantitative analysis, and simulation modeling and analysis. She conducts research related to information technology’s role in knowledge management practices. Previously she taught at the University of Hawaii and San Diego State, working with the U.S. Naval Personnel Research and Development Center in San Diego and with executives from Qualcomm, SAIC, and Sony.

Kim Shollenberger (College of Engineering) teaches heat transfer and thermodynamics courses in the Mechanical Engineering Department. Previously, Shollenberger was part of a team at Sandia National Laboratories developing advanced diagnostics for gas-liquid-solid multiphase flows. Her goals at Cal Poly include developing new course material and experiments for laboratory-based courses and a course on multiphase flows.

Linda Valenty (College of Liberal Arts) brings expertise in the realm of public policy, political psychology, methodology, and political theory. She came to Cal Poly from San Jose State to teach an introductory course on political theory and a graduate course on public political analysis. She is currently working (with co-author Eric Shiraev) on Public Policy for the New Millennium, which explores the current state of public policy and public policy analysis in telecommunications, the environment, immigration, and terrorism.
Supporting Faculty and Staff

Endowments Help Create Faculty Positions

As Cal Poly seeks to bring new faculty into the university community, endowments provide an important tool for attracting and retaining the best and brightest teachers and researchers.

In 2002 two new endowed faculty positions were filled by Chemistry and Biochemistry Professor Raymond Fernando and Crop Science Professor Jeffrey Wong.

Fernando was brought into the College of Science and Mathematics as the Arthur C. Edwards Chair for Coatings Technology and Ecology (and director of the Polymers and Coatings Program). The $1 million endowed chair – the first to be fully funded at Cal Poly – was made possible by gifts from 21 donors representing a broad spectrum of the polymers and coatings industry, with the lead gift of $500,000 contributed by Ken Edwards and Dunn-Edwards Corporation in honor of Arthur C. Edwards, the company’s co-founder.

Wong was appointed to the College of Agriculture’s J.G. Boswell Professorship, funded by a $1.2 million endowment from the James G. Boswell Foundation of Pasadena, the charitable arm of the Corcoran-based J.G. Boswell Co., California’s largest and most diverse cotton production and farming operation. Wong, who has been teaching classes in plant genetics, plans to design and teach a lab techniques class using the newest technologies to differentiate plant DNAs for selecting genes that would provide the best plant types for cultivation.
Previously endowed faculty positions at Cal Poly include the Unocal Chair for Environmental Studies, filled in 2000 by Raul Cano (professor of biological sciences and director of the Environmental Biotechnology Institute), and two Unocal Professor of Marine Science positions, filled in 2001 by Thomas Richards (professor emeritus) and Mark Moline (associate professor of biological sciences and winner of a 2001 Presidential Early Career Award for Scientists and Engineers, which carries funding to support student research studies at Cal Poly's new Marine Science and Education Research Center).

Additional faculty positions partly supported by endowment funds were established in the College of Engineering through the Lockheed Martin Endowed Professorship and the Bert and Candace Forbes Endowment.

The Lockheed Martin grant provides $20,000 per year for two years to support young faculty in their research efforts. For 2002-2004 the funding will help Dianne DeTurris (Aerospace Engineering) create a research-quality supersonic wind tunnel for use in undergraduate aerothermodynamics lab classes. DeTurris's research has garnered ongoing support since 2000 from NASA for the development and launchings by Cal Poly's Space Systems group of a reusable flyback rocket booster.

Computer Engineering faculty Diana Keen and Albert Liddicoat are sharing professorship funds provided by the Bert and Candace Forbes Endowment as part of the Forbeses' $3 million gift to the College of Engineering, one of the largest cash gifts the university has ever received.

Keen, an expert in computer-chip design, hopes to take her students
Additional faculty positions partly supported by endowment funds were established in the College of Engineering through the Lockheed Martin Endowed Professorship and the Bert and Candace Forbes Endowment.

beyond building a simple chip to understanding the tradeoffs of different design decisions and to becoming excited about how hardware and software work together to run quickly. She is particularly appreciative of the collaborative nature of the Computer Engineering Department, which is shared by Computer Science and Electrical Engineering.

Liddicoat (EE ’89) returned to his alma mater with the goal of conducting research and teaching in computer architecture, arithmetic, and networks. He will teach digital design, computer architecture, microprocessor system design, digital computer systems, and other electrical engineering/computer engineering courses.
Students learn about vineyard irrigation at a Gallo vineyard class with Bioresource and Agricultural Engineering Professor Charles Burt. Photo by Bob Anderson

**Gallo and Cal Poly: Toasting a Robust Partnership**

Cal Poly's partnership with E&J Gallo flourished in 2002 as the company planted another 50 acres of wine grapes on the university’s Chorro Creek Ranch west of campus. The plantings were sauvignon blanc grapes, a new varietal for Gallo on the South Central Coast.

In 2000 Gallo planted the first 50 acres of grapes at the Cal Poly vineyard: 25 acres of pinot noir and 25 acres of chardonnay. Cal Poly's partnership with Gallo, announced in 1999, calls for the winemaker to plant a total of 150 acres of grapes on Cal Poly land.

The university is providing the land and water for the vineyards, with Gallo overseeing vineyard development and operation. Cal Poly students benefit by using the vineyards as an outdoor classroom to learn vineyard management practices, including the latest environmentally friendly irrigation and cultivation techniques. And both Gallo and Cal Poly are using the vineyards for applied research involving Cal Poly faculty and students.

"While the new sauvignon blanc vines planted in 2002 are setting down roots, the first crop of pinot noir and chardonnay grapes in the Gallo vineyard should be harvested during the fall 2003 season," says Mark Shelton, associate dean for the College of Agriculture.

In 2002 Gallo set up an official internship program, beginning this summer, offering Cal Poly students six-month paid internships at its Modesto headquarters. "Students will gain experience in everything from vineyard management to wine making to marketing," says Shelton. "It's really exciting to be able to establish this kind of internship program with Gallo."
Enhancing Learning
Students Vote for Themselves with College-Based Fees

For some students, it was about getting the right class at the right time; for others, it was the desire to support top-flight equipment and technology.

In a spring 2002 election that boasted the second-highest turnout in Cal Poly election history, students in all six colleges voted themselves a fee increase of $125 to $200 per quarter, beginning in fall 2002, to pay for additional course offerings, computer lab updates, and equipment purchases.

"Cal Poly students are to be congratulated for the thoughtful attention they have given to the fee initiative," President Warren J. Baker said. "Their strong turnout at the polls is evidence of their commitment to our polytechnic mission and learn-by-doing educational tradition."

The initiative – unique within the California State University system – is being implemented across campus and is already having an impact.

One notable example is the newly renovated Biotechnology and Embryology Teaching Laboratory in the College of Agriculture's Animal Science Department. The lab is a technologically advanced facility where students get hands-on experience in molecular biotechnology and embryology techniques.

The state-of-the-art lab allows students to get involved in such projects as splitting and transferring embryos and identifying genetic markers, and provides a real boon to Cal Poly's pre-vet students, who gain rare practical experience.

"Undergraduates almost never get their hands on this caliber of equipment," says Animal Science Department Head Andy Thulin. "Our students perform techniques in this lab that are usually done by graduate students and professors. The lab gives all our students an edge, whether they are planning to pursue graduate degrees or enter the work force."
Enhancing Learning

Students in Cal Poly's community-based learning program are using classroom knowledge to address local needs, gain valuable experience, and earn academic credit in courses ranging from volunteer income tax assistance to technology application.

"Service learning is a powerful pedagogical tool with the potential to change the lives of students, teachers, and community members," says Kinesiology Professor Kevin Taylor, Cal Poly's nominee for the Thomas Ehrlich Award for Service Learning (sponsored by Campus Compact, a U.S. coalition of colleges and universities committed to encouraging student citizenship, campus/community partnerships, and the integration of teaching and research with public engagement).

Taylor’s Adapted Physical Activity course comprises the Friday Club (students – in collaboration with the San Luis Obispo County office of Special Olympics – teaching sports skills to people with developmental disabilities); the EyeCycle program (students taking people who are visually impaired on tandem bicycle rides); and the Adapted Paddling Program (students introducing people with mobility impairments to kayaking). Both EyeCycle and the paddling program are offered in collaboration with SLOCO Access, a local nonprofit devoted to advocacy for people with disabilities.

In 2001 the paddling program (sponsored by Necky Kayaks, Aquabound Paddles, and Perception Kayaks) received a $5,000 Quality of Life award from the Christopher Reeve Paralysis Foundation. With further Necky sponsorship, the program’s resources now include 14 boats, a trailer, paddles, and life jackets.

"Service learning is a pure form of teaching that truly binds the university to its local community," says Taylor. "Teachers increase the effectiveness of their teaching and ensure that it remains culturally relevant, while students see the profound impact that their knowledge can have on others."
Fans of Cal Poly athletics see all the passes, the receptions, the shots, the spikes, the saves, the swings, the slam dunks, the wrestling moves, the swimming strokes, the sprints, and the pitches.

They watch athletes on the field, court, track, mat, and in the pool.

What Mustang followers don’t see very often, however, are what Cal Poly student-athletes do in the classroom or in the community.

One such student, volleyball player Kristen O’Halloran, is completing Cal Poly’s general engineering program in four years.

O’Halloran hopes to continue her studies toward a Ph.D. in biomedical engineering with a focus on cardiovascular engineering. She has applied to such schools as the University of Arizona, UC San Diego, Duke University, the University of Texas, Purdue, and Washington University in St. Louis.

“I haven’t taken ridiculous class loads, and I haven’t gone to summer school,” the senior outside hitter says. “I have good time-management skills, especially during the volleyball season. You have to prioritize things. Everything has to be structured. I always take textbooks on volleyball trips. You never know when you will have an extra 20 or 30 minutes for studying.”

O’Halloran also has been involved in the fee committee for the College of Engineering. She holds a 3.97 grade-point average.
Thanks to long-term strategic planning and the confidence of California voters, campus construction continued at Cal Poly during 2002.

Cal Poly's new master plan, approved in spring 2001, paved the way for facilities that will be needed to meet the needs of a projected growing enrollment for the next 20 years.

At the top of the list of construction projects is the first phase of on-campus student housing, designed to help ease the community housing crunch. The 804-bed facility features furnished, four-bedroom, two-bath suites targeted for sophomore students.

Scheduled for occupancy this fall, the complex expands on-campus student housing by 22 percent, for a total of approximately 3,580 students. It is financed through housing revenue bonds.

Also under way is a 41,000-square-foot building for the College of Engineering, which will house part of the Aerospace Engineering and Materials Engineering departments, all of Manufacturing Engineering, and one Environmental Engineering laboratory.
The shell of the $10 million Engineering III facility, funded through an education bond passed in 1998, is near completion.

In November 2002, California voters approved another education bond – Proposition 47 – that will provide Cal Poly some $37.3 million over two years.

"Even in a difficult economy, California voters clearly recognized that an investment in education is a sound building.
investment," said President Warren J. Baker. "Their support will allow us to tear down outdated structures to make room for modern facilities designed and equipped to produce tomorrow's engineers and architects."

The bond funds will complete the interior of Engineering III, which is expected to be occupied in summer 2004. They will also finance all costs for a new 112,000-square-foot Engineering IV facility that should be completed in 2006. This building will house the rest of the Aerospace Engineering and Materials Engineering departments, all of Industrial Engineering and some Civil and Mechanical Engineering labs.

These two new buildings will include high-tech labs for aero thermodynamics, controls and flight simulation, materials engineering microelectronics fabrication, and civil engineering semiconductor fabrication safety.

New high-tech equipment will include lasers for mapping, visualization, and velocity measurement in the wind and water tunnel laboratories; scanning electron and optical microscopes for the materials engineering laboratories; and helicopter controls and gyroscope controls test systems for the aeronautical engineering control laboratories.

These facilities will help maintain the engineering college's ranking as one of the top public, undergraduate programs in the nation, according to U.S. News and World Report.

Cal Poly's architecture program will also benefit from the education bond. It includes money to design, through the schematic drawing stage, a new multi-story building in the heart of campus for the College of Architecture and Environmental Design.

The college educates approximately one in every five architects in California. In a recent poll of practicing professionals conducted by DesignIntelligence magazine, Cal Poly's architecture program was ranked as the No. 2 architecture school in the nation, second only to Harvard University.

The new architecture building will house the college's construction management and architecture programs and provide added lecture space. It will rise on the site of the existing Heating and Air Conditioning facility in the campus core. That complex is a conglomeration of small one-story buildings ranging from 40 to 60 years old.

Finally, the education bond includes funds to prepare plans for remodeling and renovation of the 30-year-old Engineering West building that currently houses architecture laboratories and offices, engineering laboratories, and the Industrial Technology program. The 165,000-square-foot remodel would improve lighting, wiring, and classroom and lab space. Bond funds will also be used to renovate the Engineering, Engineering East and Computer Science buildings.

All of these upcoming construction projects fulfill the mission of Cal Poly's master plan and allow the university to strengthen its advantage as one of the nation's top polytechnic universities by offering students up-to-date facilities and the latest high-tech equipment.

Student demand for those programs is high, and graduates of those programs are in equally high demand among California's expanding technology-based employers.
In the words of veteran Chemistry Professor Christina Bailey, studio classrooms provide the best of two worlds.

An instructional design concept that originated in the fields of architecture and art, studio classrooms combine both lecture and lab activities.

"We do everything in the same classroom," explains Bailey, who designed the studio classroom where she now teaches after visiting Rensselaer Polytechnic Institute in Troy, N.Y., to observe its physics and mathematics studio classrooms. "We have computers for computer-assisted research and experiments, as well as all equipment for wet chemistry," she says.

The melding of lecture and lab into one extended classroom experience provides for better learning, Bailey firmly believes. "In a traditional lecture and lab setting, it's discontinuous," she says. A lecture may take place days from when students attend the actual lab session on the lesson at hand - and students may even have a different instructor for the lab sections.

"Chemistry is an empirical science. We depend on observation when we work in a lab to enforce what we teach during lectures. As an instructor,
you’re always wondering, ‘Did my students get that?’ In a studio classroom, an instructor knows exactly where the students are.”

Cal Poly has helped pioneer the use of studio classrooms in the chemistry arena, says Bailey. She has published papers and made presentations nationwide on teaching chemistry in a studio setting, and has been contacted by other universities interested in studio-classroom development and teaching.

Studio-classroom use is expanding at Cal Poly as well. The university now has studio classrooms available for classes in physics, chemistry, developmental math, statistics, and calculus in addition to art and architecture.

Teaching in a studio classroom is not without its challenges, however. “There are 64 students in the class,” Bailey says, “and you’re doing a lab as well as a lecture for more than two hours, so the instructor can’t just stand up front and lecture in traditional mode. You have to do a lot more planning to put together workbooks for the students to work along with you. You have to have your activities and experiments planned as part of your lecture.

“It is not a passive environment for the students or the instructor,” she says.
Developing State-of-the-Art Instructional Technology

Two Initiatives Upgrade Computer Infrastructure

In 2002 Cal Poly brought its computer facilities one step further into the 21st century with two initiatives supporting teaching and research.

In January Cal Poly joined the national Internet2 network, a consortium of 180-plus universities working in partnership with industry and government.

As part of Internet2, Cal Poly can connect to other Internet2 universities and industry partners to enhance education—enabling professors and students to operate high-powered telescopes in the Andes and Hawaii via computer from Cal Poly classrooms, for example, or to use the Internet to connect to and operate electron microscopes and other high-tech equipment at 12 partner universities.

After joining the consortium, Cal Poly assembled a team of "Internet Champions"—instructors charged with educating fellow faculty and students on how to take advantage of Internet2 in research and in the classroom. The team, led by Hugh Smith (Computer Science), includes Rollin Strohm (BioResource and Ag Engineering), Walt Bremer (Landscape Architecture), Ken Griggs (Management), Ned Schulz (Psychology), Francis Villablanca (Biology), Rosemary Bowker (Biological Sciences), and John Pietsch (University Center for Teacher Education).

Later in the year Cal Poly launched Telecomm, a major upgrade of the campus telecommunications system's wiring and infrastructure to bring video, voice, and data-transfer improvements to all buildings on campus.

Part of the California State University System's 23-campus Technology Infrastructure Initiative component of its Integrated Technology Strategy, Telecomm's purpose is "to ensure all CSU students, faculty, and staff access to the broadest possible range of information resources and related technology in order to advance excellence in teaching and learning, quality of student experience, administrative productivity, and personal productivity."