

## SECTION 2

# ACADEMIC INITIATIVES AND PLANS

In this section we focus on the programmatic elements of the Budget Plan by describing the principal planning issues in the schools, major labs and institutes, and the academic support areas.

### SCHOOL OF EARTH SCIENCES

One of the most significant challenges facing the School of Earth Sciences is to develop a new model for industry partnerships. For some time, a large portion of the School's activities has been funded out of industrial affiliate income. With the consolidation of the oil industry the old model of cooperation no longer seems viable in many instances. In these cases, the school is working with companies to tailor alliances and research projects that capitalize on our research interests and their specific needs. This will be an evolving process as both the industry and our research groups test out these new relationships. The School's intention is to continue vigorous research programs while regaining an income stream through these new alliances.

Earth Sciences is completing its first year with a full complement of faculty recruited under the School's Ocean Margins program. Curriculum development is continuing in this area, with the first oceans track classes having already been taught this year. Much of the curriculum development is taking place in cooperation with Stanford's Learning Lab. The design of several classes is contingent on a close relationship with Hopkins Marine Station and the Monterey Bay Aquarium Research Institute for both content and presentation. The course sequence will utilize technology to develop a live video link between these institutions, allowing for an innovative delivery of course material and lab exercises. The School has allowed

the Learning Lab to use space in Green Earth Sciences as a curriculum development laboratory for this particular project. Once the development phase has ended, the School plans to convert these rooms into unique classroom space to support the ocean margins curriculum.

The Earth Systems Program continues to grow and serve as the School's major draw of undergraduates. With its burgeoning co-terminal masters' program, Earth Systems shows no signs of slowing. In fact, discussions are well under way to develop a PhD program within Earth Systems. If approved, we anticipate the first students being enrolled in the fall of 2002.

### SCHOOL OF EDUCATION

The School of Education remains in an intensive period of faculty recruitment that will lead to a replacement of over 50% of the faculty during the period 1994/95-2000/01. Six new faculty joined the School in 1999/00, and there could be five more new faculty in 2000/01 if open searches are filled. Faculty searches during 1999/00 include positions in sociology of education, social studies/civic education, child development, and technology and education.

Recruitment of faculty in technology and education will augment research and development in technology-based educational interventions grounded in contemporary theories of learning, cognition, and social practice. Once the searches in technology and education are completed, the School will expand its current program in Learning, Design, and Technology to include a doctoral program. A major task will be to create a Learning Technology Center that incorporates

design components and supports software development and product-oriented research. This will be a multi-year project.

Under the direction of Professor Linda Darling-Hammond, the School continues the redesign of the Stanford Teacher Education Program (STEP). Professional Development Schools (PDSs) have been established, allowing the School of Education to make a stronger impact on the teaching and learning in those schools, but also in many other Bay Area schools linked to them. These PDSs present an opportunity for local schools and School of Education faculty to work collaboratively on a school reform agenda, to prepare new teachers, and to enhance the capacity of practicing teachers. Another part of the “redesign” includes infusing technology into the curriculum of the courses in the teacher education program. With the support of a federal grant, STEP leads a consortium of schools, colleges and non-profit education organizations that will infuse powerful uses of technology into both the university-based and school-based curriculum of pre-service teachers. Finally, by the end of 2000/01, STEP hopes to have made some structural changes to encourage more Stanford undergraduates to enter the teacher education program.

As an extension of the “Children and Communities” initiative begun in 1998/99, the John Gardner Center for Youth and Their Communities will become a reality in the fall of 2000. This Center will be a university-community partnership to build new practices, knowledge and capacity for youth development and learning within Bay Area communities and Stanford. It will support community-based efforts to join school reform, youth development, and community development into a cohesive set of arrangements that enhance future prospects of youth. The School foresees meaningful, long-term engagement by Stanford’s faculty and students in reconsidering the role of research and professional practices in supporting community collaboration for youth development and learning. The Gardner Center will serve as facilitator, convener, resource, and evaluator, generating reflection, knowledge, documentation,

and analysis for those communities and for Stanford.

## **SCHOOL OF ENGINEERING**

There are three areas where new initiatives are being explored in the School of Engineering.

- **Biomedical Engineering** – The Institute for Biomedical Engineering was launched this year with faculty and staff working on program planning, curriculum development, fundraising, and finance. The immediate challenges are to define the graduate curriculum and to clarify the organizational structure of the Institute.
- **Materials** – Across the University, there are a number of related efforts that may represent opportunities for Stanford to affect research and teaching in the materials area. A faculty committee has been organized to look at these issues over the coming months and to propose possible actions.
- **Computational Mathematical Engineering** – The School has great strength in computation, and the field has become quite pervasive across all of the School’s teaching and research programs. Because of the growing importance of this area, the School is exploring options for formalizing the teaching and research activities of this discipline.

The School also continues to develop programs that encourage undergraduates to consider engineering as a field of study. Engineering’s summer programs, one for entering Stanford students and one for continuing students interested in an undergraduate research experience, have been met with enthusiasm. Over the past year we have had two pilot programs in the school: one in Civil and Environmental Engineering for students seeking to work on research during the academic year and an intensive summer program in Electrical Engineering. The programs have been successful, and the School intends to sponsor these programs again and to increase the number of available undergraduate research options.

To support these efforts, the School must have appropriate teaching and research facilities. Over the past decade, the School of Engineering completed the first part of an ambitious plan for the construction of new facilities and the renewal of existing space. Over the next ten years there will be a second set of construction and renewal projects designed to build upon what has been accomplished.

Over the next several years, Electrical Engineering, Computer Science, Chemical Engineering and Biomedical Engineering will be fully housed in the same general area, forming one end of the Science and Engineering region. These departments and their areas of inquiry involve a large number of Engineering's faculty and students and represent important frontiers of new knowledge.

For this reason, the School plans to devote substantial resources to the further enhancement of this region and its facilities. Most of this development will occur along the western side of the Science and Engineering Quadrangle, along Via Ortega.

## SCHOOL OF HUMANITIES AND SCIENCES

Academic planning efforts next year in Humanities and Sciences will be focused on several departments that were reviewed by external visiting committees this year. These were: the Departments of Applied Physics and Physics, Art and Art History, Economics and the Division of Literatures, Cultures and Languages. The latter included the review of the Departments of Asian Languages, Comparative Literature, French and Italian, German Studies, Slavic Languages and Literatures, and Spanish and Portuguese. The Language Center and the Divisional structure were also reviewed. Concurrently, the Dean's Office will develop a long-range School-wide strategic plan that merges its academic, budget and space planning and provides a context in which resource allocation decisions can be made more effectively.

There are a number of significant undergraduate education issues that are part of the School's

overall agenda. In January, an *ad hoc* Advisory Committee on Interdepartmental Programs (IDPs) was convened to provide guidance to the Deans on the status of IDPs. The Committee was charged with addressing a host of issues, including the advantages and disadvantages of teaching programs outside of departmental structures, the extent of resources made available to programs, the strength of ongoing faculty support, and organizational structures. The Committee's report will be delivered by the end of spring quarter, and the consideration and implementation of its recommendations will be a centerpiece of the School's agenda in 2000/01.

Also new this year is a process that will lead to a full-scale review of all undergraduate and graduate curricula and degree requirements in the major and minor. Departments are selected from among those scheduled for external review by the School, and the H&S Curriculum Committee serves as the reviewing body. Focal points of the reviews are program coherence and rigor, the quality of teaching and advising, and the effectiveness of the learning environment. Because of the size of the School, H&S plans to complete its review of the approximately 55 degree programs over a period of five years.

As in previous years, the President's Fund and the Stanford Fund have provided important seed funding for pilot projects across the School. Activities that will be launched next year include the Center for the Study of the Novel, a new interdisciplinary effort in Asian Religions and Cultures, a study of and mitigation funds for laboratories and lab curriculum in the sciences, course development that will strengthen the global character of the undergraduate curriculum, and expanded internship opportunities for the Overseas Studies Program. Another new initiative, the Stanford Humanities Lab, will fund pilot projects that are collaborative in nature, drawing together teams of senior faculty, advanced undergraduates and postdocs, as well as museum curators and individuals from area cultural centers and industries.

## SCHOOL OF LAW

The Campaign for Stanford Law School closed this year, having raised \$115 million—\$65 million beyond the original goal. The Campaign enabled the School to bring its faculty salaries more in line with most of our peer institutions, to help fund the establishment or expansion of several academic programs, and to increase student aid by 40%.

Despite the success of the Campaign, Stanford Law School faces several key challenges. Peer schools with greater resources are increasing their efforts to recruit faculty by offering dramatic pay packages. The skyrocketing cost of housing in the Bay Area only magnifies this differential. Faculty recruitment and retention remain the single most critical issue facing the School.

The inadequacy of the Law School's physical plant is also an issue of growing concern. In the 25 years since Crown Quadrangle was built, no significant effort has been made to renovate the facility. The buildings are in need of repair and are becoming technologically obsolete. The creation and expansion of programs such as Law & Economics, Law & Business, Law, Science & Technology, Transnational Business, Environmental Law, and Negotiation and Conflict Resolution have placed greater demands on space.

Space is likewise an issue for Law students. Those fortunate enough to be offered campus accommodations are housed either in Crothers or scattered throughout dorms a considerable distance from the School. This situation not only puts the School at a disadvantage with our peer schools, but it detracts from the lively intense academic environment. The School is optimistic that external funding can be secured for facilities enhancements.

Last spring the Law School created a Dean's Strategic Council (DSC) to assist planning for its future. This 30 member team represents the School's most trusted and influential advisors. A parallel faculty, staff and student committee is being formed and will work in tandem with the DSC, exploring the most pressing issues facing the School and helping to develop plans to address those needs.

## GRADUATE SCHOOL OF BUSINESS

The School's single most important goal, and the single most critical budget assumption, is recruiting and retaining faculty. The proposed budget assumes a net increase of twelve faculty, with related increases in faculty support staff, research assistants, and housing support. It also assumes retention of key faculty, despite the intense competition for outstanding scholars that continues unabated. Closely related are new faculty-driven research and course development initiatives in social innovation, e-business/e-commerce, and global organizations, as well as increased research and course development in entrepreneurship, supply chain management, and casewriting.

Over the past year, most of the original GSB-South Building was renovated and refurbished, improving the look and comfort of student areas and the location and workspace of staff. Most of the capital investment proposed for 2000/01 is for ongoing upgrades in classroom technology, including the first phase of infrastructure and equipment for remote videotaping and videoconferencing. Technology investment continues at a high level to support teaching, research, and business processes, including creating a web presence.

Earlier this year, Dean Joss commissioned a strategic review of competitors and developments in the "markets" for management research and education to serve as the starting point for exploration and then implementation of strategic options. With this project still in process, the 2000/01 budget does not provide for specific investment in initiatives or directions that might result from that review; although the significant investments in faculty and technology included in the budget are essential building blocks for the future.

In addition, the School will continue to:

- Pursue alternatives for "globalizing", including experiments with delivering Executive Education programs in other countries, ongoing student study trips, and exploration of international "alliances" in coordination with the strategic plan.

- Work closely with UNEXT (and other vendors, as appropriate) to develop course modules and teaching materials for web-based and other technology-enhanced delivery. Develop faculty workload and compensation policies that support participation in GSB-sponsored activities, and develop linkages with local corporate management development needs.
- Increase the percentage of alumni participation in fundraising from the current approximately 30%, and consider “public relations” strategies for making the GSB look “bigger” in impact than it is in numbers, including in dissemination of faculty research.

The School will also undertake a number of internal initiatives to improve communication and management with and among faculty, staff and students. These include improving the admissions selection processes; improving the annual review process for senior faculty in particular (to include development plans and peer review); improving overall management of staff, including “user evaluation” in each area that provides service; and improving the diversity of faculty, staff and students.

## SCHOOL OF MEDICINE

Recruiting and retaining faculty and faculty leaders has been and will continue to be a critical issue facing the Medical School. In 1999/00, the School completed the appointment of a new chair in the Department of Anesthesia and expects to appoint a new Dean before the end of the fiscal year. Investments in programs in Anesthesia, as well as in Surgery, Pathology, Medicine, Molecular Pharmacology, Neurology and Neurological Sciences, and Ophthalmology, will continue as recently appointed chairs realize their faculty recruitment and program plans.

The completion of the Center for Clinical Sciences Research (CCSR) has allowed for the recruitment of some faculty positions that previously remained vacant due to lack of available research space. However, the cost of housing in the local area remains a serious problem in recruiting high

quality faculty from other parts of the country and in retaining some of the younger faculty with growing families. The relocation and zero-interest loan programs have been key elements of successful recruitment packages.

Research activities in the School continued to grow at a substantial rate of more than 9% in direct research expenditures during 1998/99. Cumulative growth in direct research expenditures in the School has exceeded 50% in the five year period from 1994/95 through 1998/99. The School has accomplished this remarkable growth while increasing research space only 10 percent. Direct research expenditures during the current year are expected to exceed those of 1998/99 by approximately 12% and to remain strong in 2000/01. While the opening of CCSR provides almost 134,000 square feet of state-of-the-art research facilities, it will not provide enough additional space to allow the School to vacate research space leased off-campus or to house all of the new faculty and programs currently in planning.

One of the initiatives begun in 1998/99 and gathering momentum in the current year is the redefinition of an appropriate curriculum for students in the biomedical sciences to prepare them to be leaders in academic medicine. Faculty task forces are presenting plans regarding the educational facilities needs and proposed changes to the medical student curriculum for implementation in the fall of 2001. The School anticipates substantial progress in this area and in reform of the curriculum for graduate students during the upcoming year.

Plans for the necessary revitalization of the E. D. Stone buildings are well underway and specific programs are being developed. These include major changes to the library and teaching space, through replacement of the Edwards Building, which will help position the School to explore the opportunities for educational outreach and distance learning. The resources to complete this revitalization plan have not yet been fully identified and will depend, in large part, on gifts for this purpose.

During the current year the clinical activities of the School are transitioning from the merged enterprise, UCSF Stanford Health Care, to a new clinical enterprise, Stanford Hospital and Clinics (SHC), which includes Lucile Salter Packard Children's Hospital. The new entity will be more closely linked to the School of Medicine with the creation of the position of the University's Vice President for Medical Affairs who will oversee the activities of both the Hospitals and the Faculty Practice of the School. This new structure provides for more physician participation in the management of the clinical activities and is expected to support the growth of new and innovative programs that will benefit both the Hospitals and the School.

The challenges of the current health care market will continue to impact the profitability of many clinical programs, which will make investments in new programs more difficult, and require that current programs be critically evaluated in terms of their role in the threefold mission of the School. In addition, the resources that will return to SHC with the dissolution of the merger are less than those available before the merger. This will limit SHC's flexibility and opportunities to invest in new programs and challenge their ability to continue to provide the support to the academic programs that has been available in the past.

The School is fortunate to have developed reserves, both centrally and in the departments, but will continue to have pressing needs to develop and enhance existing programs and to satisfy commitments to department chairs and departments around program support and space. The development campaign, as well as ongoing income and responsible use of reserves, should provide the needed support.

## HOOPER INSTITUTION

The Hoover Institution will close its \$75 million fund-raising campaign—*Ideas Defining a Free Society*—successfully this year, raising well in excess of its stated goal, doubling the donor base, and securing increased, sustained expendable

giving. With the campaign's completion, the Institution is financially stable and poised to launch new initiatives.

After a number of years of modest growth Hoover plans expansion in a number of areas. The Hoover Library and Archives will expand their collecting activities; the Institution will embark on new research initiatives and expand the depth and breadth of existing programs; and dissemination of the Institution's ideas will be emphasized in the coming years. Current planning has the Institution growing by 30 percent between 1998/99 and 2003/04.

Library and Archives – The Hoover Library and Archives will continue to acquire material on social, political, and economic change for its six area collections (Africa, Americas, East Asia, Europe, Middle East, and Russia and the CIS). In addition, projects to collect archival and other special materials are under way in three key subject areas: transition to democracy and economic freedom, history of communism in the Soviet Union, and the Islamic movement and its conflict with the West.

Research – The research program will grow by increasing the number of resident fellows and by incorporating more affiliated (part-time) fellows into the research program. Ongoing institutional research projects, such as the K-12 Education Initiative, the National Security Initiative, the Property Rights Initiative, and the Initiative on the End of Communism, will be a focus of increased support.

Communications – In addition to its two outreach vehicles, the *Hoover Digest*, a quarterly journal on research and public policy, and *Uncommon Knowledge™*, a weekly public affairs television series, the Institution inaugurated a weekly essays series featuring Hoover fellows writing short articles for national weekly and monthly periodicals.

The Hoover Institution Press will increase its publication output in 2000/01. After publishing six to eight books a year in the 1990s, the publication rate will soon increase to twenty-five books a year.

Facilities – A capital project is in progress that will recast the bells of the Hoover Tower carillon, add a fourth octave, repair the automatic play mechanism, and build a carillonneur's playing cabin. This project will be completed by the end of 1999/00.

Securing additional storage for library and archives material remains a focus of the Institution. By 1999/00, storage in the library and archives will be virtually at full capacity and well in excess of "working" capacity. In addition, ongoing needs include a state-of-the-art preservation facility, a media reading room to provide access to a growing collection of archival audiovisual holdings, and space in which additional archival technical services staff can catalog the growing collections.

#### **VICE PROVOST AND DEAN OF RESEARCH AND GRADUATE POLICY**

The Office of the Vice Provost and Dean of Research and Graduate Policy has several important functions: the development and oversight of research policy, management of the Office of Technology Licensing and the Environmental Safety office, oversight of the Independent Laboratories, Centers, and Institutes, and policy development for Stanford's graduate education program.

This year Stanford Graduate Fellowship Program reached its goal of awarding 330 fellowships to outstanding graduate students in science, engineering and the social sciences. In addition, the program supplements the stipend of students who come to Stanford with three-year National Science Foundation or similar grants. Of the students chosen as Stanford Graduate Fellows, 92 also earned nationally competitive fellowships and are honored as joint fellows.

The eight Independent Laboratories, Centers, and Institutes reporting to the Dean of Research encourage and support Stanford's openness to interdisciplinary research and scholarship, and currently account for about 40% of the total non-Medical School research volume. Of particular note is the new Laboratory for Advanced

Materials, which incorporates the Center for Materials Research and establishes a home for the broader materials research on campus. In addition, there will be work with the School of Engineering in development of a new facility for the Ginzton Laboratory.

Two administrative units now report to the Dean of Research: the Office of Technology Licensing (OTL) and the Environmental Health and Safety Office (EH&S). The mission of OTL is to transfer Stanford technology for public use and benefit and to generate royalty income for research and education. OTL's success in technology transfer has allowed the establishment of 25 Stanford Graduate Fellowships. EH&S has established a stable program which devotes its resources to the continued support and welfare of the Stanford community and, especially, its research activities.

#### **VICE PROVOST FOR UNDERGRADUATE EDUCATION**

In 1999/00, the Stanford Introductory Studies (SIS) programs of the Office of the Vice Provost for Undergraduate Education (VPUE) reached full capacity after the recent period of rapid growth and expansion.

- Introduction to the Humanities (IHUM) provided all 1,750 freshmen with the fundamental challenge of developing their powers of textual interpretation in response to multiple faculty perspectives and different disciplinary methods.
- Freshman Seminars brought 120 groups of 16 or fewer students into close intellectual connections with faculty through inquiry-based classes that ranged across the spectrum of knowledge.
- Over 145 Sophomore Seminars and Sophomore College classes (maximum enrollment of 12) inspired second-year students toward decisions about their major field of concentration and established important faculty mentor relationships for potential research experiences in subsequent years.

- Freshman-Sophomore College added a residential dimension to the opportunities for building relationships between faculty and first- and second- year students, with over 40 faculty meetings over dinner on a regular basis at the Dean's House in small groups selected from the 180 resident students.
- The Writing and Critical Thinking Program welcomed its new faculty director to oversee implementation of reforms in required first-year writing courses and improved coordination with other university writing programs.
- The Science, Mathematics and Engineering Core redesigned its program to match faculty resources to student interest.
- The Large Introductory Course project enhanced delivery of instruction in calculus and continued support for enhancements in economics and chemistry.

Taken together, these SIS programs reached all freshmen and almost all sophomores, and involved more than 300 faculty in teaching first- and second-year students, the vast majority in small classes.

In 1999/00 Departmental Grants for Independent Study and Research expanded from a limited pilot initiative to become an established feature of the VPUE. Over 200 upperclass students are served by these new initiatives, and many of them will acquire the research skills necessary for undertaking an honors project. Some of the fellowship recipients will be housed on campus over the summer in a Summer Research College, building on the success of the Honors College in September. Together with the residential Honors College serving about 130 students and about 450 student grants from Undergraduate Research Opportunities, the Departmental Grants for Independent Study and Research have added an important dimension to the undergraduate experience.

The Budget Plan for 2000/01 aims to sustain the high standards of excellence that these vibrant undergraduate programs have achieved and to continue to foster selective innovation. The

budget anticipates a slower rate of growth as appropriate to a steady-state rather than rapid-growth environment. Priority for VPUE investments goes to effective quality control and to new initiatives sparked by the success of past innovations.

New for 1999/00 is a comprehensive plan for building a technology infrastructure that promotes two goals – faculty development and assessment of undergraduate programs. In response to faculty feedback, the VPUE will offer technology services to professors in support of their SIS courses. Academic Technology Specialists with expertise in pedagogy will help faculty design tools that will allow the best use of valuable in-class time.

Besides support for classroom teaching, additional technology services will enable VPUE program directors and managers to assess program quality and effectiveness. The VPUE will use the findings to guide the development of new initiatives, to ensure the continuous adjustments of the program in response to faculty and student needs.

An example of such a new initiative is the Sophomore Mentoring program, jointly administered by the Freshman and Sophomore Programs office and the Undergraduate Advising Center. In 2000/01, the program will expand from a small pilot to an important component of sophomore advising. Professors who have taught Freshman Seminars or Sophomore College are invited to serve as formal academic advisors for students who took their course. Students are offered the possibility of switching from their assigned Freshman Advisor to the new Sophomore Mentor. This program is expected to match over 200 sophomores to faculty advisors, many of whom have never previously participated in pre-major advising. The outcome is expanded capacity for advising in general and an infusion of senior faculty into mentoring relationships with students in the crucial year of the major declaration.

For 2000/01 the VPUE budget also supports the alignment of several programs for independent study, honors and research into a coherent, progressive set of programs in Stanford Advanced

Studies, following the model of Introductory Studies. Closer coordination between the departmental grant and the student grant programs is expected to provide better service to both faculty and students seeking to work together on scholarly projects. This organization will also manage Stanford's internal processes for nominating students for national fellowship competitions. The VPUE has as its goal increasing the number of successful applications for these prestigious awards as the undergraduate reforms of the past few years create the conditions for faculty/student relationships that lead to more compelling letters of recommendation.

Two initiatives in oral communication round out the new VPUE programs for 2000/01. The first of these extends the instruction in oral presentation skills that has been successful for the Sophomore College to the residents of the Freshman-Sophomore College. The second oral communication initiative is Speaking Across the Curriculum. For this effort, specialists in rhetoric and oral communication will work with faculty on adding an oral component to their course requirements and with students on preparation for the formal presentation. The Center for Teaching and Learning directs these initiatives, working in close collaboration with Freshman and Sophomore Programs and with the required Writing in the Major program.

#### **STANFORD UNIVERSITY LIBRARIES AND ACADEMIC INFORMATION RESOURCES**

During 2000/01 Stanford University Libraries and Academic Information Resources (SUL/AIR) will attempt to scale up dramatically its digital library programs adding to the current distributed array of services capacities for: overall coordination and strategic planning; meta-data creation, enhancement, and management; digital asset management and preservation; and continuing development and/or acquisition of web-based user interfaces and manipulation tools. In addition, SUL/AIR will be acquiring more information and knowledge sources in digital form through its collection development programs.

Substantial progress will be made in 2000/01 on a remote storage facility. We expect that a site will be chosen before the end of the current fiscal year and construction substantially underway next year with occupancy in 2001/02.

During 2000/01 SUL/AIR and its advisory groups and constituencies will complete and bring forward for Provostial and Presidential review a master plan for the library facilities it operates on campus. While reconstruction and activation of the Bing Wing of the Green Library has absorbed our attention for a decade, the remaining 12 on-campus facilities operated by SUL/AIR have aged and, in most cases, adapted inadequately to the new technologies.

Recruitment and retention of specialized staff have become a major challenge. Local housing prices have made it difficult to recruit librarians and information specialists. Silicon Valley firms are hiring away information technology staff, especially key middle managers. Even without these challenges it is simply difficult to find high-level, accomplished subject and technical specialists to continue to serve the varied Stanford research programs.

SUL/AIR is expanding the 24 hour reading room in Meyer Library by incorporating more space and installing desktop computers (Macintosh, Wintel, and Unix). One-time funding for this was awarded by the Provost in the 2000/01 budget; continuing this funding as base presumably will be based on occupancy rates during the year.

#### **LEARNING TECHNOLOGY & EXTENDED EDUCATION**

The Internet and other new forms of technology are bringing about significant changes in almost every aspect of society. Stanford, like many universities and colleges, is working to anticipate these changes and to take advantage of new opportunities to improve and expand programs through the use of technology. During the past year we have created a new organization, Learning Technologies and Extended Education (LT/EE), to

focus greater attention on the uses of technology in both traditional and new educational programs.

Stanford has a long history of leadership in using technology for teaching and learning. For over thirty years, the School of Engineering has been making regular Stanford courses available to students in remote locations using television, videotapes and other media. Today, the Stanford Center for Professional Development (SCPD) offers more than 250 courses per year over television and the Internet, including courses that lead to a fully online master's degree in Electrical Engineering.

The Educational Program for Gifted Youth (EPGY) is another long-standing example of using technology to expand Stanford's programmatic reach. EPGY provides instruction in math, science and language skills to advanced students in primary and secondary schools as a supplement to their regular studies. Courses are delivered by CD-ROM, with access to Stanford-based tutors via telephone and the internet.

These pioneering programs have allowed us to begin to adapt quickly to the rise of "distance learning" as a major force on the educational landscape. Stanford has a large base of people and resources on which to build new programs using more advanced technologies.

LT/EE brings together both campus-based continuing education (The Continuing Studies Program, Continuing Medical Education, Professional Education programs) and technology-based distance learning programs such as SCPD and the Stanford Channel. On a combined basis, these programs serve more than 15,000 registrants per year and produce gross revenues of more than \$35 million. We will expand from that base by creating a more effective infrastructure to produce and distribute programs. For example, we are presently working with the School of Medicine on a series of internet-based continuing medical education programs. We are also developing distance learning programs in areas ranging from Classics to International Studies.

Part of the strategy for distance learning will include partnerships with outside entities that can add to our production and distribution resources. We have concluded one such partnership with Unext.com, a start-up company that will develop business and management courses in conjunction with leading universities such as Stanford, Columbia and the University of Chicago. We have also announced plans for a new alliance with Princeton and Yale universities to develop and distribute distance learning programs for our collective alumni.

Technology provides opportunities not only to expand, but also to improve our traditional educational programs. The Stanford Learning Lab, now in its third year of operation, is a center for experimenting with technology in traditional Stanford courses. We have worked extensively in areas such as Human Biology, Earth Systems and Overseas Studies to develop new approaches to teaching which maximize the value of technology in the classroom. The goal is both to deploy and to carefully assess the impact of technology as part of the learning process. The Learning Lab is the center of a growing local and international community of scholars interested in these issues. Fifteen Stanford faculty members are formal members of the Lab, representing disciplines ranging from Chemistry to Education. In addition, through a grant from the Wallenberg Foundation in Sweden, the Lab is at the center of the Wallenberg Global Learning Network, a consortium of learning labs at universities in Sweden, Norway, Germany and Japan.

To be successful, LT/EE must adopt many of the characteristics of the new internet economy: flexibility, speed, and an openness to collaboration and innovation. Stanford begins from a position of leadership in this area, and we are well positioned to continue to set standards for the quality and scope of technology-based education.

### **STANFORD LINEAR ACCELERATOR CENTER (SLAC)**

The total budget for the high energy physics program at SLAC is expected to be relatively flat

in the current year, but growing program needs call for an increase in the future. Significant growth is expected at the Stanford Synchrotron Radiation Laboratory (SSRL). The SSRL budgetary increase is primarily associated with the project SPEAR3 which upgrades the synchrotron radiation facility, SPEAR. In parallel to the SPEAR3 upgrade, there is a multi-year program to upgrade the SPEAR beam lines in order to benefit from the increased beam power available with SPEAR3. Joint funding for this project is being provided by NIH and DOE.

The other major initiative of SSRL is the R&D program for an x-ray free-electron laser called the Linac Coherent Light Source (LCLS), which utilizes the last third of the linear accelerator. It is a multi-institution collaboration which includes four other DOE national laboratories and UCLA. We hope to have DOE approval to proceed to the conceptual design phase this fall and to submit a proposal for construction starting in 2002/03.

Several interesting projects are underway in the high energy physics program. The National Aeronautics and Space Administration (NASA) has recently approved the Stanford proposal for the Large Area Telescope (LAT) investigation on the Gamma-Ray Large Area Space Telescope (GLAST) mission, planned for launch in 2005. The LAT project is an international collaborative effort of

the Stanford team (SLAC, Physics Department and HEPL) with several other institutions. The funding for the U.S. effort comes from NASA and DOE.

The PEP-II B Factory turn-on has been a great technical success. With the B Factory producing data at a very substantial rate, a critical increase in computing resources is needed to accommodate the anticipated data rates. Accelerator improvements are required to further increase operating efficiency and luminosity.

Another key element in the high energy physics program is an extensive R&D effort aimed at the eventual construction of a large electron-positron linear collider (NLC) which will make possible unique experimental investigations at the TeV energy scale. The NLC R&D program is being carried out in close collaboration with SLAC's sister lab KEK (Japan's National Laboratory for High Energy Physics) and three other DOE National Laboratories.

For many years SLAC has requested increased funding from DOE for infrastructure support. Aside from addressing the routine programmatic or ES&H infrastructure requirements, SLAC needs to complete the replacement of 35 year-old equipment and utility systems, and to finish a seismic upgrade program for the many buildings and structures on site.

