

**D R A F T**

**PLANNING FOR THE NEW  
MILLENNIUM**

**RALPH J. CICERONE, CHANCELLOR**

**MICHAEL R. GOTTFREDSON, EXECUTIVE VICE CHANCELLOR**

**MICHAEL P. CLARK, ACCREDITATION LIAISON OFFICER**

**A SELF-STUDY  
PREPARED BY UC IRVINE  
FOR THE**

**WESTERN ASSOCIATION OF SCHOOLS AND COLLEGES**

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## **CHAPTER ONE: OVERVIEW OF THE SELF-STUDY**

### **PARTICIPANTS IN THE SELF-STUDY**

In September 1998, then-Executive Vice Chancellor William J. Lillyman appointed a Steering Committee to prepare for the Western Association of Schools and Colleges (WASC) reaccreditation visit, initially planned for spring 2000. Associate Executive Vice Chancellor Herbert Killackey was appointed as the campus Accreditation Liaison Officer and was asked to serve as chair of the Steering Committee. Other members appointed to the team included William Parker, then-Associate Executive Vice Chancellor; James Danziger, then-Dean of Undergraduate Education; and Robert Daly, Director of the Office of Analytical Studies and Information Management. Representatives to the Committee from the Academic Senate were appointed by Professor James Fallon, Divisional Chair. They included Professors David Bruce, Department of History; Barbara Doshier, Department of Cognitive Sciences and then-Vice Chair of the Academic Senate; Virginia Mann, Department of Cognitive Sciences and Associate Dean of Graduate Studies for Social Sciences; Martha Mecartney, Department of Chemical and Biochemical Engineering and Materials Science and Associate Dean of Graduate Studies; Michael Mulligan, Department of Developmental and Cell Biology; Robert Newsom, Department of English and Comparative Literature, and Associate Dean of Undergraduate Education; Debra Richardson, Department of Information and Computer Science, and then-Chair of the Council on Educational Policy; Rajesh Gupta, Department of Information and Computer Science; and Peter Taborek, Department of Physics and Astronomy.

In May 1999, Dr. Erwin Seibel, then-Associate Director of WASC, visited UC Irvine to meet with the Steering Committee and review the proposed topics selected for self-study: Enrollment Management, Improving Communication Skills at UCI, and Undergraduate Research Opportunities at a Research I University. Dr. Seibel advised postponing the review until spring 2001, to allow additional time to develop the proposed self-study themes.

In early 2000, several changes were made to the Steering Committee team. New members included Dr. Judy Shoemaker, Director of Research, Evaluation and Grants; Michael Leon, Professor of Neurobiology and Behavior, and Associate Dean of Biological Sciences, who replaced Michael Mulligan; Yong Chen, Associate Professor of History, and Associate Dean of Graduate Studies, who replaced Martha Mecartney; Meredith Lee, Professor of German, and Dean of Undergraduate Education, who replaced James Danziger; and Jenny Duke, University Editor.

In August 2000, Herbert Killackey stepped down as chair of the Steering Committee due to the establishment of a new position in UCI's central administration that became responsible for the project. Michael Clark, newly appointed Associate Executive Vice Chancellor, Academic Planning, and also Professor of English and Comparative Literature and former Acting Dean of the School of Humanities assumed Dr. Killackey's role and is now the chair of the UCI WASC Reaccreditation Team. Also newly established within UCI's central administration was the position of Associate Executive Vice Chancellor, Space and Enrollment Management, and Barbara Hamkalo was named to that post. Dr. Hamkalo is Professor of Molecular Biology and Biochemistry and a former

Associate Vice Chancellor for Research in the Office of Research and Graduate Studies and a former Acting Dean of the School of Biological Sciences.

In early fall 2000, Dr. Greg Scott was appointed as Associate Director of WASC and assumed Dr. Seibel's responsibilities as the WASC representative for UCI's 2001 reaccreditation efforts. He visited the campus in October to present the key principles of WASC's newly adopted process model for accreditation reviews. The process should recognize institutional diversity, emphasize collaboration, affirm the centrality of educational effectiveness, focus on institutional purposes and results, and should build on existing evidence that the institution can use to improve itself. The new WASC model defines accreditation around institutional demonstration of two core commitments: institutional capacity and educational effectiveness. Dr. Scott proposed, therefore, revising the proposed self-study topics to reflect the new model, and thus Enrollment Management was replaced by Assessment of Undergraduate Education. The other two topics—Improving Communication Skills and Undergraduate Research Opportunities—were retained.

Other members of the UCI community who have assisted in providing information and expertise to the self-study reports are Said Shokair, Director, Undergraduate Research Opportunities Program; Dr. De Gallow, Director, Instructional Resources Center; Dr. Audrey DeVore, Associate Director, Campuswide Honors Program; Dr. Susan Wilbur, Director of Admissions and Relations with Schools; Linda Georgianna, Professor of English and Comparative Literature; James Craig, Assistant Vice Chancellor, Campus Life; Mark Warner, Director of Financial Aid and Scholarships; and Dr. Marie Richman, Assistant Director, Office of Analytical Studies and Information Management.

## **ONLINE COMPONENTS OF THE SELF-STUDY**

Draft reports of each component of the self-study were forwarded to the Academic Senate committees, to deans and associate deans, and to the Associated Graduate Students and the Associated Undergraduate Students of UCI for review and comment. Their comments may be viewed on the UCI Accreditation Website.

The campus has developed an accreditation website to provide members of the WASC visiting team, other WASC and university officials, and UCI students, faculty, and staff with easy access to the pertinent information about UCI that is now available on the World Wide Web. This use of the Web to provide relevant information in the context of accreditation is intended to comply with WASC's goal of making the accrediting process more useful and efficient. The format identifies information required by the nine WASC Standards. The Website includes UCI data as well as information from the University of California system's [Website](#).

## **A BRIEF HISTORY OF UCI**

UC Irvine is one of the 10 campuses of the University of California, and one of three that opened in the 1960s. The campus is located in Orange County, a center of high technology, biomedical technology, and a dynamic international business environment, with a 1999 population of some 2.5 million people. In conjunction with the 1,489 acres of campus land, there are 510 acres of "inclusion" area land which are being developed for purposes complementary to those of the University. That land includes 180-acres for the University Research Park, a joint venture with The Irvine Company that has attracted such private companies as

America Online, Canon Information Systems, and Cisco Systems. Corporate tenants in the research park agree to collaborate with UCI faculty and students on internships, research, and other programs. In addition, the 202-acre San Joaquin Freshwater Marsh, part of the University's Natural Reserve System, is adjacent to the campus. UCI Medical Center, the teaching hospital for the College of Medicine, is 13 miles from campus, on a 31-acre site in the City of Orange.

UCI opened to students in fall 1965 with 116 faculty and 1,589 students. Since then, its programs, faculty, and graduates have achieved distinction in virtually every discipline. The fall 1999 campus enrollments (excluding the College of Medicine) totaled 18,199, including 15,522 undergraduates and 2,677 graduate students. About 70 percent of these students live off campus.

As of the 2000-2001 academic year, UCI offers 53 bachelor's degree programs, 36 master's, and 38 Ph.D. degree programs. As a research university, UCI challenges students at every level, both academically and personally. While research is critical to graduate education, the research environment also opens up new educational experiences for undergraduates. Students have access to a faculty at the forefront of their fields and also have opportunities to participate directly in faculty research projects. In addition, to empower students for the future in an information-focused society, UCI has integrated computer technology throughout the curriculum and campus life.

Two Nobel Prizes in 1995 for founding faculty F. Sherwood Rowland in Chemistry and the late Frederick Reines in Physics, helped to secure UCI's position among the leading American research universities. More recently, UCI has been ranked prominently along with much older universities for excellence in

the arts and humanities, earth system science, management, social sciences, technology, and information systems.

The quality of students' educational experience and the caliber of UCI's faculty now consistently place the campus among the nation's 10 best public universities, and among the top 50 universities overall. Election to the American Association of Universities (AAU) a group of 62 of the most distinguished research institutions, is another indication of UCI's stature within the academic community.

## **MAJOR DEVELOPMENTS SINCE THE 1991 ACCREDITATION REVIEW**

At the conclusion of its 1991 accreditation review, the WASC team presented the following five major recommendations:

### **RECOMMENDATION 1 — PLANNING, GOALS, AND RESOURCES**

WE HAVE TWO PARTS TO THIS RECOMMENDATION. THE FIRST IS THE SILENT DRAG OF HABIT. WE FOUND IN MANY PLACES (E.G., PROGRAM REVIEWS, ALLOCATION STRATEGIES, STAFF DEVELOPMENT PLANNING) POLICIES AND PRACTICES DESIGNED FOR AN EARLIER INSTITUTION, THAT APPLY LESS TO THE PRESENT, AND THAT COULD BE ILL-SUITED FOR THE BUDGET REALITIES OF THE FUTURE. WE RECOMMEND, THEREFORE, THAT THOSE TOOLS OF THE UNIVERSITY BE REVIEWED TO SEE IF THEY WILL BE AS POWERFUL IN

CREATING THE FUTURE AS THEY WERE IN BUILDING UCI TO ITS PRESENT CONSIDERABLE STATURE.

THE SECOND PART IS ABOUT INTERNAL CONNECTIONS AMONG KEY ELEMENTS IN THE UNIVERSITY'S PLANS. WE HAVE COMMENTED SEVERAL TIMES ABOUT THE SEPARATION OF PLANS FROM THE BUDGETS AND ABOUT THE LACK OF PRIORITIES GUIDING PLANS. WE BELIEVE THE ECONOMIC, PUBLIC POLICY, AND DEMOGRAPHIC CHALLENGES OF THE FUTURE WILL BE BETTER MET BY INSTITUTIONS THAT CAN DEAL AS WELL WITH LIMITS AS WITH GROWTH. WE RECOMMEND, THEREFORE, THAT A PRACTICAL INTERRELATIONSHIP AMONG PLANS, GOALS, AND RESOURCES BE DEVELOPED SUCH THAT A GENUINELY STRATEGIC VISION GUIDES ACTIONS.

In both parts of Recommendation 1, the WASC reviewers were influenced by their sense that UCI has learned well to manage the opportunities and problems of growth in resources, but that in the years ahead the public and private sources of funds might not sustain that growth. Accordingly, the WASC team recommended that UCI determine ways in which campus priorities can be addressed given changing resource patterns.

### **UCI's Response**

The first recommendation essentially advises UCI to develop planning processes and objectives that would be more oriented toward the future and that would be flexible and innovative enough to accommodate “budget realities” that might

differ significantly from those of the past—i.e., the campus should not count on remaining in the mode of rapid growth that marked the first 25 years of its history. The collapse of the State budget in the early 1990s proved the wisdom of that recommendation. Fortunately, UCI was in fact able to adjust to a drastic reduction in funding and resources during those years, and the campus emerged from that recession with its academic mission and research programs intact.

Since that recession, the amount of State funding has steadily increased (though proportionately it has fallen to less than 25 percent of UCI's total budget, a drop that reflects a nationwide reduction in state support for public research institutions). Even more importantly, the level of non-State funding at UCI has increased dramatically. In 1999-2000, UCI received \$115,870,000 in State and Federal contracts and grants, and more than \$51.7 million in private funds, both record amounts for the campus. Perhaps even more significantly, the entire UC system is projected to grow rapidly over the next 10 years, and UCI is scheduled to grow more than any campus in the system: by 2010-11, UCI is projected to have 27,600 students, an increase of 9,795 from 2000-01. In that same period, the number of faculty FTE is projected to increase by 566, from just over 900 to 1,466. Since State funds are directly linked to enrollment growth, these projections indicate an extraordinary period of funded growth over the next decade.

These dramatic changes in levels of funding and projected growth have necessitated increasingly flexible planning processes at UCI, and they have turned planning into an ongoing and ubiquitous activity on the campus. To coordinate these planning efforts centrally, UCI has created two new administrative positions dedicated to planning: Associate Executive Vice Chancellor for Space and Enrollment (Barbara Hamkalo) and Associate Executive Vice Chancellor for

Academic Planning (Michael P. Clark, who is also the Accreditation Liaison Officer). These administrators are working closely with the Academic Planning Group (APG) and the on Planning and Budget (CPB) to make sure all aspects of planning on the campus are integrated, and that information regarding those plans is regularly communicated to all affected units.

The scope of the plans has ranged from individual academic department or administrative office plans to campus-wide plans. Campuswide planning takes place formally through two standing committees: the Council on Planning and Budget, which is an elected, representative committee of members of the Academic Senate, and the Academic Planning Group, an administrative committee appointed by the Executive Vice Chancellor (who may elect to chair the group or to appoint a representative to chair it). The Academic Planning Group is composed of administrators and faculty. These two committees serve in an advisory role to the Executive Vice Chancellor, and their activities are coordinated by the ex-officio appointment of the chair and vice-chair of the Council on Planning and Budget to the Academic Planning Group. The two groups consider a wide range of planning issues. The Planning and Budget committee formally comments on and recommends approval (or not) of proposals regarding all academic programs (new majors, interdisciplinary initiatives, etc.) It also is the deliberative body of the Senate for any large-scale proposals requiring significant expenditures or any other substantial change in the allocation of resources on the campus. In the past, the primary job of the Academic Planning Group was the review of requests from the academic units regarding authorization for recruitment of faculty and, in some years, budgetary requests. The assignments of this group vary considerably, depending upon the circumstances, however. During the 1999-2000 academic year, for example, following the allocation of FTE for a two-year period in 1998-99, UCI has begun to explore

ways of increasing the cooperation and interaction between the administration and the Academic Senate regarding campuswide planning, and to systematize that planning process to a greater degree. A major step in that direction occurred in 1999 when the Executive Vice Chancellor approved a proposal from the Council on Planning and Budget that the Council join together with the Academic Planning Group to make recommendations to the Executive Vice Chancellor regarding the allocation of FTE (a task formerly assigned to the Academic Planning Group alone). Further cooperative efforts are being explored by the chair of the Council on Planning and Budget and the Associate Executive Vice Chancellor for Academic Planning, and the campus will continue to explore ways to increase cooperation between the administration and the Senate in the planning process and to coordinate the various parts of that process to a greater degree.

### **Enrollment Planning**

Enrollment planning is structured around three time frames: short-term, intermediate, and long-term. UCI's short-term enrollment plans are updated at least twice yearly, in conjunction with the undergraduate and graduate admissions offices, the UCI Enrollment Council (a group of faculty, staff, and administrators), and the UC President's Budget Office. Intermediate-term plans (10 or fewer years) and long-range plans (more than 10 years) are updated less frequently. The short-term enrollment plans are regularly communicated to the campus by the Executive Vice Chancellor and affect many operational decisions. The intermediate enrollment plans serve as building blocks for each academic unit's plan and are integrated with, and dependent upon, the campus's overall intermediate enrollment plan. Long-term plans are modified occasionally as needed, to reflect changes in the levels of State funding, changes in State demographics, other external factors, and/or major changes to UCI's academic programs. The primary long-term enrollment plan is the Long-Range

Development Plan (LRDP), which was originally produced in 1965 and established maximum enrollments and land use. The LRDP has been modified only twice since its inception.

### **Capital/Facilities Planning**

With regard to capital/facilities planning, the LRDP established land-use parameters and the location of physical facilities; however, shorter-term physical facility plans are closely tied to changes in enrollments, academic and research programs, and funding sources. In fact, for the first decade of the 21<sup>st</sup> century, the lag in construction of physical facilities will be UCI's major enrollment and research growth constraint. Campus physical planners work closely with all other campus planning functions to ensure that capital plans reflect and support the campus's overall academic goals.

### **Academic Program Planning**

UCI's academic programs are continually being evaluated and revised by the academic units, Senate faculty committees charged with that responsibility, and by the central administration. This systematic evaluation is due not only to faculty input but also to the results of the external reviews that each undergraduate and graduate program undergoes every five to eight years. The external reviews ensure that the programs are providing the best possible education for their students and research opportunities for the faculty. Faculty, department chairs, and deans use the reviews to modify the programs to ensure that they meet all goals. These reviews are essential to each dean's planning process, as the Executive Vice Chancellor has charged the deans with the continual improvement and development of programs under their purview. Also, the Academic Planning Group meets regularly and advises the Executive Vice Chancellor concerning enhancements to UCI's existing academic programs and in

the development of new programs. During the 1999-2000 academic year, the group focused entirely upon the development of new academic programs, especially at the graduate level, that would not arise out of existing programs.

### **Planning for Housing and Parking**

UCI's housing and parking planning processes are driven by enrollment planning, as well as by growth in the number of faculty and staff. Student housing has established a goal of housing at least 40 percent of all UCI students on campus; approximately 30 percent currently live on campus. It also is expected that another 10 percent of UCI's students will be living within walking distance of the campus. Obviously, since perhaps half of the student body will be driving to the campus, UCI has an obligation to provide adequate parking. Planning for campus parking is thus dependent upon not only the availability of on-campus housing, but also on the number of students and employees. Plans developed by the Parking and Transportation Services Office are incorporated into the campus LRDP.

### **University Advancement Planning**

As the distribution of the University's resources moves away from State funding toward private funding, the importance of **University Advancement's** planning process and plans has greatly increased. The Chancellor and the Executive Vice Chancellor have instructed University Advancement to set its goals based upon the objectives of the campus and the priorities set by each of the deans. One of Advancement's primary objectives, for example, is to raise funds to establish multidisciplinary research centers. The faculty has identified such centers as being of extreme importance for UCI's continual development and improvement of its academic programs and reputation.

Since the 1991 WASC accreditation review, UCI has moved from being a young major research university that aspired to achieve national status, to a research university that is now recognized as one of the top research universities in the United States. Ten years from now, UCI will have increased the size of its faculty by more than 50 percent and will have reached its maximum projected enrollment. In that decade, UCI will become a large, mature university complete with an even wider range of ever more distinguished programs and professional schools. That ambitious goal will be attained in the same way that UCI has grown so successfully over the past three decades: by devoting substantial resources to the on-going planning that is a fundamental part of campus life.

## **RECOMMENDATION 2: UNDERGRADUATE EDUCATION**

THE TEAM COMMENTED, “[T]HE ASPIRATION TO CREATE A DISTINCTIVE UNDERGRADUATE PROGRAM IN A DISTINGUISHED RESEARCHED UNIVERSITY HAS NOT RECEIVED THE QUALITY OF ATTENTION IT DESERVES AT UCI.” IN PARTICULAR, THE TEAM URGED THE UNIVERSITY TO COME TO A CLEARER DEFINITION OF WHAT IT MEANS BY “GREATNESS” IN UNDERGRADUATE EDUCATION AND THEN TO COUPLE THE ACHIEVEMENT OF THOSE GOALS WITH THE ALLOCATION OF MORE FACULTY ATTENTION AND MONEY. SOME SIGNIFICANT ACHIEVEMENTS ARE IN EVIDENCE, SUCH AS NOTABLE IMPROVEMENTS IN THE GENERAL EDUCATION PROGRAM. YET SERIOUS PROBLEMS PERSIST IN MATTERS AS FUNDAMENTAL AS THE AVAILABILITY OF CLASSES TO ENABLE STUDENTS TO GRADUATE WITHIN EXPECTED TIMEFRAMES.

## **UCI's Response**

UCI's response to the three points WASC raised in Recommendation 2 — course availability, notable improvements in general education, and defining "greatness" in undergraduate education — are addressed below.

### **Course Availability**

One of the recurring problems cited in the review was access to upper-division writing courses. The Writing Board directly took up the challenge of increasing the number of these writing courses. The School of Biological Sciences, in particular, started fulfilling the needs of its majors with its own upper-division writing course, whereas it had previously relied upon School of Humanities courses. The new course received praise by an external committee that had been brought in to review UCI's upper-division writing requirement by the Council on Educational Policy. In addition, UCI established a policy of fully funding the lower-division writing program that essentially has eliminated any backlog in those courses. The results of these two actions are encouraging. Between 1989 and 2000, the average number of undergraduates increased 10 percent (1989-90=12,844; 1998-99=14,190) while the number of seats in upper-division writing courses increased by 40 percent (1989-90=3,501; 1998-99=4,907). Additionally, over the same period the number of seats in lower-division writing courses increased 15 percent.

More broadly, since 1991 UCI has taken other significant steps to assure the general availability of classes. First, we introduced **TELE**, UCI's voice-response registration system, which became operational in spring 1991. It enables students—22 hours per day, seven days per week—to enroll in classes. Students are assigned appointment “windows” according to their class level and may enroll

throughout the enrollment period once their "window" opens. When a student requests a class section that has already been filled to capacity, TELE automatically lists the remaining open sections of that course in its response to the student, thus enabling the student to more conveniently select another section. Academic units monitor demand and enrollment in courses both via TELE and the Web. When additional class sections are added, the new sections are linked to existing ones and are available for immediate enrollment. Also, some faculty members send email to students on a waitlist to notify them of the availability of the new section. A waitlist program automatically lists students who TELE does not admit to a course, for example, because the student has not satisfied the course's prerequisite(s), or the course is full, etc. In spring 2001, that program will enable a student to request to be automatically admitted to a course he has been waitlisted for, when a seat becomes vacant. TELE also provides a convenient way to add and/or drop classes once the quarter begins, and in addition, students needing to register for tutorial assistance courses can do so via TELE.

TELE also performs other functions, such as course prerequisite checks (including transfer credit verification) to ensure that only fully eligible students are enrolled on the first class day. In spring 2001, TELE will be able to accommodate faculty assigning final course grades online. Students who receive full financial aid can use TELE to authorize payment of their Registration fees.

Second, we developed EEE UCI's Web-based Electronic Education Environment. Both faculty and students use the services of the EEE to enhance enrollment. EEE was implemented in the early 1990s and is very popular with students and academic counselors, receiving over 206,000 "hits" during the 1998-99 academic year. Students use the online, searchable *Schedule of Classes* to identify current course offerings that meet breadth requirements and to find class sections that fit

into their schedules. EEE also provides services that reach well beyond issues of course availability. Now a joint project of the Division of Undergraduate Education, the UCI Libraries, the Registrar, and Network and Academic Computing Services (NACS), EEE also supports communication between instructors and students, course tools, educational materials and access to official University communications.

Third, the Dean of Undergraduate Studies, with support from the Division's Office of Research, Evaluation and Grants, projects demand in key courses and advises the central administration about areas in which over-enrollment funds might be needed. In spite of significant growth in the number of new students and, in fall 1999, the largest enrollment in the history of UCI, things went exceptionally smoothly: 94.1 percent of the new freshmen and 87.6 percent of all undergraduates were able to obtain a full (12+ units) academic schedule as of the first day of classes.

Relatively few curricular bottlenecks exist at UCI at present. Problems with course access are encountered primarily by those seeking entrance to just a few of UCI's minors (Digital Arts and Management, to be specific) and to certain electives, such as computing for the non-computing majors. Also, students complain that they are not always able to enroll in classes at times they view as convenient. While these limitations do not prevent students from graduating, the campus is addressing them within the constraints of space, funding, and the availability of instructors. Data from UCI's six-year assessments of graduation rates indicate that about 75 percent of UCI's students are persisting to graduation; this is about the average rate for all UC students. To get beyond the intuitive and anecdotal assessment of what factors affect a student's ability to graduate within four years (where UCI's percentage of success has declined since 1995, from 40

to 32 percent), the Office of Analytical Studies and Information Management is planning a study of recent graduates. Certain academic enrichment activities, such as the UC Education Abroad Program, students' decisions to double-major, and internships, may be playing a role, as well as the more predictable negative variables of economic hardship and underpreparation. The current average time-to-graduation for students entering as new freshmen is about 13 quarters, which equates to a shade more than four years and one quarter.

### **Notable Improvements in Undergraduate Education**

UCI appreciates the recognition in the 1991 WASC review of the serious efforts that were made in the late 1980s to improve undergraduate education. The 1991 review noted in particular UCI's review and augmentation of new campus [breadth \(general education\) requirements](#). The Academic Senate Council on Educational Policy assesses all breadth categories on a regular review cycle. (The impact of that assessment of the Upper- and Lower-Division Writing requirements is presented in the self-study chapter on [Communication Skills](#).) Assessment of the newest breadth categories, which were approved in 1990, began in 1997-98. The requirement in Multicultural Studies and International/Global Issues was reviewed in 1998, and the requirement in Mathematics and Symbolic Systems was completed in 1999. The requirement in Language Other Than English will occur in either 2001 or 2002.

Among the achievements noted in the 1991 WASC review was the establishment of the Campuswide Honors Program. We are pleased to report its considerable impact on the campus and its noteworthy successes. Studies in the mid-1980s had revealed that the undergraduates leaving the campus mid-career (dropping out and transferring before completing their degrees) had higher academic qualifications than did those who persisted. Alarmed, the UCI faculty took a hard look at what

curricular challenges we were offering our best students. The Campuswide Honors Program (**CHP**), among the first responses to that concern, no longer stands in isolation as an academic enrichment to the general curriculum. Instead, numerous discipline-based honors programs and honors sequences have joined it in such key courses such as Organic Chemistry and in widespread interest in undergraduate research and active learning opportunities. In addition, the Campuswide Honors Program has given birth to two complementary programs: the Scholarship Opportunities Program (**SOP**) and the Undergraduate Research Opportunities Program (**UROP**). SOP identifies and assists students in the competition for prestigious national awards. In 1999-2000, campus undergraduates were awarded two Fulbrights, four Coros, one Truman, one Javits, two Goldwaters, one Rotary Scholarship, three National Science Foundation awards, and one National Defense Science and Engineering Fellowship. That year UCI also had finalists in the Rhodes, Marshall, and Mellon competitions. UROP involves 250 students annually and it facilitates individualized and group research in all disciplines. The self-study chapter on Undergraduate Research Opportunities in a Research I University provides a fuller elaboration of UROP's role in campus efforts to enhance the quality of the undergraduate educational experience.

### **Defining “Greatness” in Undergraduate Education**

In response to the 1991 WASC review, the Academic Senate took up the challenge to define “greatness” in undergraduate education at UCI. As part of that process, in 1994 the Academic Planning Council, endorsed by then-Chancellor Laurel L. Wilkening's Vision Statement of 1994, made the following four-part recommendation to the Senate, saying:

If UCI is to have a distinctive undergraduate program of high quality and is to attract students of high quality, then some careful thought should be given to the adoption by UCI of several programmatic characteristics that distinguish the UCI undergraduate experience from that of other universities. These characteristics should transcend department specific programs. While the Academic Planning Council recognizes that the curriculum content is a responsibility of the Academic Senate, we suggest for discussion the following ideas:

UCI is one of the most culturally diverse research universities in the country. This feature should be converted to an educational asset. An argument can be developed along the following lines. Individuals who are to be successful in the 21<sup>st</sup> century will be those who understand and appreciate the cultural differences of the world. UCI offers the best environment of any university to experience the diversity of world cultures and to learn how to function effectively in such an environment. Issues of cultural diversity should be integrated into as many courses and majors as possible. Study abroad should receive a special emphasis.

Every student graduating from UCI should experience the rewards and challenges of independent research and scholarship. Every student should be required to complete a “senior project” either in an undergraduate experience or as a senior thesis.

Communication skills, both oral and written, should be integrated into every course and major on the campus.

Another skill that may be a prerequisite for success in the 21<sup>st</sup> century is the ability to extract useful information from an overwhelming richness of information available anywhere at any time in electronic form. A UCI graduate should be prepared to survive and prosper in the electronic information era.

These four recommendations, while more prescriptive in some details than the campus has been willing to accept, reflect a widespread consensus about how excellence in undergraduate education ought to be defined at the University of California, Irvine.

Building on the breadth requirement in Multicultural Studies and International/Global Issues introduced in 1990, one of the Academic Council's recommendations called for more than the establishment of selected courses to

satisfy the requirement, which specifies one course each in multicultural studies and in international/global issues. Echoing the original spirit of UCI's 1987 Task Force on General Education, which recommended the creation of this breadth requirement, the Academic Council's recommendation calls for an enrichment of the entire curriculum through integration of materials addressing cultural diversity and global experience. A recent Academic Senate review of the requirement in Multicultural Studies and International/Global Issues indicates that it has had the intended dual effect of diversifying campus curricular offerings, as well as altering existing courses by inclusion of more culturally diverse materials. The requirement also assures that all undergraduates have at least minimal exposure to these topics. A telling example of a course modified by the introduction of the requirement is the Humanities Core Course, which introduced a multicultural component in the early 1990s in response to the new breadth requirement.

In other cases, existing majors in various units were modified to meet the more general spirit of the new breadth requirement, such as the increased emphasis on global issues in the History major. UCI also created some new majors, such as the International Studies major in the School of Social Sciences, which immediately attracted some 400 students, and the European Studies major in the School of Humanities, newly created to provide interdisciplinary alternatives to existing majors in national languages and literature, history, art history and philosophy. Other majors have been modified: the reconfiguration of the History major to create a global emphasis is a case-in-point.

This global perspective is further reflected in courses and extra-curricular programs beyond our majors and minors. Student participation in the UC Education Abroad Program (EAP) has gone from 113 in 1994-95 to 190 in 1999-2000, an increase of 68 percent. We are eager to accomplish more here. In

absolute numbers we still lag behind all other UC campuses except UC Riverside. The greatest increase in student participation in the EAP has been in semester- and quarter-long programs, which are alternatives to many students for whom the full-year commitment appears culturally or fiscally daunting. Through UCI's International Opportunities Program (IOP), administered by the Division of Undergraduate Education, UCI also encourages alternative experiences to EAP, when appropriate. The Language Other Than English breadth requirement, designed among other things to encourage students to take additional years of language preparation while they are still in high school, is scheduled for Senate review by 2002. Although this requirement is arguably modest, given that all incoming new freshmen must complete two years of a high school language other than English to be UC-eligible, it is the strongest campuswide foreign language requirement within UC system. Intensifying the campus requirement, all undergraduate majors in the School of the Humanities complete two years of university-level instruction in a language other than English.

In regard to another of the Academic Council's recommendations, although there has been a reluctance to mandate that every student complete a senior project, a widespread interest at UCI in extending the possibility of undergraduate research to increasing numbers of students has characterized curricular change in the 1990s. The topic is addressed in full in the self-study chapter on Undergraduate Research Opportunities in a Research I University. Highlights include the steady expansion and widely acknowledged success of the Campuswide Honors Program (CHP) (established in 1989), the creation of a number of disciplinary-based honors programs, (most notably in the School of Social Sciences), and the creation of the Undergraduate Research Opportunities Program (UROP). The Humanities Core Course, which enrolls 1000+ students from across the campus in their first year at UCI, just instituted a year-long program in research methods that

culminates in a research paper in spring quarter. In addition, students in specific disciplines regularly undertake independent and group research and performance projects, including events in the School of the Arts, design projects in The Henry Samueli School of Engineering, and a capstone requirement for field study in the School of Social Ecology. A 1996 study has demonstrated that about one-half of the graduating classes at UCI have been engaged in some form of undergraduate research.

The Academic Council's recommendation concerning communication skills has become a basis for the self-study chapter on Communication Skills . Arguably, no topic has concerned the campus so broadly as the question of the communication skills of UCI undergraduates and the enhancement of writing and oral communication in the curriculum. As Chapter Four explains, we have devoted substantial resources to this issue and made significant improvements in this area of our curriculum. We anticipate even greater changes in the next two years as we recruit and appoint a senior Professor specializing in this field to help focus our efforts more effectively and lend greater visibility to teaching and research in rhetoric and composition.

The final recommendation by the Academic Council addresses students' capacity to survive and prosper in the electronic information era. UCI has addressed this concern through several avenues. First and foremost, all students are now introduced to the Web and its resources through the curriculum of the two sequences used to satisfy the Lower-Division Writing requirement. Emphasis in these courses is on the extraction and evaluation of information from the Web in undergraduate research. Thus, a minimal technological capacity and guidance on the appropriate use of Web resources is assured for every undergraduate. In the Humanities Core Course, most of the lectures are now Web-based, linking the

lecture outlines to additional resources and information and guiding students beyond the material directly presented by the lecturer. In addition, the writing component of the core course also takes advantage of the same on-line resources as the composition program, and the Humanities Core Course requires in addition a year-long on-line curriculum in research methods (including print-based library research as well as on-line sources) that eventuates in a genuine research paper in the spring quarter of the students' freshman year as noted above. Together, these two courses enroll almost all of the first-year students every year, so we are reasonably assured that all of our students have had some systematic training in sophisticated research methods on-line and in the library by the time they are sophomores.

Many students enroll in additional courses designed to provide basic familiarity with electronic resources. For example, all students in the School of Social Sciences must complete a basic introductory course in computing, either in the Department of Information and Computer Sciences or by taking a course entitled "Computer-Based Research in the Social Sciences," offered in the School of Social Sciences. In other units, new programs, minors, and emphases have been created to integrate electronic resources with more traditional academic training. For example, the School of the Arts now offers a minor in Digital Arts for students interested in combining their interests in graphic arts and computers.

There has been a steady expansion of instructional technology within faculty teaching activities at UCI. The growth of interest in the electronic environment has been supported by faculty workshops, EEE services, technology mini-grants for course development, and a reconfiguring of support services, integrating Media Services into the Instructional Resource Center. Recently, the campus has cautiously begun to explore the feasibility—and credibility—of offering some

instruction entirely on-line in carefully controlled and limited situations, including a section of a popular economics course and a recently approved master's program in Criminology, Law and Society. Student and faculty interest in these areas, and their level of preparation in instructional technology have been assessed at regular intervals, and activities in these areas are overseen directly by the Dean of Undergraduate Education through UCI's Instructional Resource Center (IRC).

In sum, considerable activity characterizes the campus response to the question of "greatness" in undergraduate education. Because excellence cannot be defined here by some of the most familiar measures used to create national ranking of university programs (such as extramural grants, research expenditures, Ph.D. production, and the like), we are pleased to report the foregoing indicators of faculty engagement, curricular enhancement, and successful new programming. Since the 1991 WASC review, several more programs have been developed but have not been discussed here: the Freshman Seminars Program, the General Studies Advising Program, the NSF SMET project, the Hewlett grant in Problem-based Learning, the Teaching Colloquy, and the Celebration of Teaching awards and recognition events. Together, these activities represent what we believe to be a highly successful and comprehensive effort to imagine and address new measures of greatness in undergraduate education.

### **RECOMMENDATION 3 — DIVERSITY**

UCI HAS BEEN FORTHRIGHT AND AGGRESSIVE IN DEFINING AND PURSUING DIVERSITY AS AN INTEGRAL ELEMENT OF THE INSTITUTION. THE WORK OF YOUR "THINK TANK ON DIVERSITY," THE NEW MULTICULTURAL AND

INTERNATIONAL GENERAL EDUCATION REQUIREMENTS AND A NUMBER OF PROGRAMMATIC EFFORTS SUCH AS THOSE INITIATED BY UNIVERSITY EXTENSION, DEMONSTRATE SERIOUSNESS OF INTENT AND A MEASURE OF PROGRESS. YET, IT IS ALSO TRUE THAT PEOPLE OF COLOR AND WOMEN CONTINUE TO BE SERIOUSLY UNDERREPRESENTED IN IMPORTANT ADMINISTRATIVE POSTS AND WITHIN THE FACULTY DESPITE A PERIOD OF GROWTH WHEN MANY NEW HIRING DECISIONS WERE MADE.

## **UCI's Response**

### **Efforts to Recruit and Retain Diverse Faculty and Staff**

UCI is pleased that the previous WASC reviewers recognized our serious efforts to increase the diversity of our faculty and the campus community in general, and we share their disappointment that those efforts have not resulted in more success.

In an era of significant growth, UCI has redoubled its efforts to ensure that qualified women and minority candidates for faculty and staff positions are attracted to the campus and to the Medical Center. The campus continues to engage in an aggressive effort to recruit and retain such qualified candidates, and employs the following mechanisms to reinvigorate the process of diversifying the UCI workforce.

The Office of Equal Opportunity and Diversity (OEOD), in conjunction with the Office of Academic Personnel, has created a Website that lists Senate and non-Senate academic openings. All academic units are expected to advertise their open

positions on that Website, as well as in other media, particularly those likely to reach qualified women and minority candidates.

Chancellor Ralph J. Cicerone has communicated to the deans and department chairs his desire for UCI to embrace the goal of diversifying its academic and staff workforces. Executive Vice Chancellor Michael R. Gottfredson has encouraged the department chairs to include women and minority faculty on search committees to the greatest extent possible and to assign one member of each search committee specific responsibility for monitoring affirmative action efforts.

The Executive Vice Chancellor has reminded the deans/director of the hiring goals for each academic unit based on UCI's 1998-99 Affirmative Action Plan. The Executive Vice Chancellor also has provided resources for academic search committees, including a list of academic search procedures; a brochure entitled "Guidelines for Faculty Search Committees"; a link to a UC San Diego Website that contains a list of "best practices" in achieving a diversified applicant pool; and the availability statistics for each department, based on the number of Ph.D.s granted in the degree fields represented in each department's faculty.

OEOD and the Office of Academic Personnel continue to work jointly to provide educational programs to department chairs and other hiring authorities, concerning non-discrimination, affirmative action, and diversity in hiring and retention. OEOD has also compiled a list of relevant campus resources for department chairs (see enclosed handbook).

Since 1991, the Executive Vice Chancellor has conducted annual pay equity studies to identify any patterns that might indicate possible disparities in pay for

women and minority faculty in comparison to their male colleagues. Overall, no systematic pay equity problem has been found to exist at UCI, but monitoring activities continue.

In 1998-99, the Executive Vice Chancellor, in conjunction with the Senate Council on Academic Personnel, developed a special type of career review, called a **Merit Equity Review**, for the purpose of examining individual personnel cases with regard to pay equity in relation to our standard peer-review merit system.

In conjunction with staff personnel's **Human Resources** Office, OEOD provides frequent educational programming to managers, supervisors, and staff concerning non-discrimination, affirmative action, and diversity in staff hiring and retention.

OEOD is also surveying the campus to identify which policies and programs are instrumental in helping to retain UCI employees, and in assisting them in attaining their promotional goals. In addition, OEOD has engaged in an aggressive campaign to inform the campus community of the rights and responsibilities that relate to non-discrimination, leaves of absence, and available resources

These efforts have and will continue to assist the University in further diversifying its staff and faculty. UCI has made some gains in the past few years in recruiting and retaining qualified women and minority candidates, as noted in the UCI 1998-99 Affirmative Action Plan.

From 1990 to 1997, UCI made progress in the representation of women in the academic work force. (The 1999-2000 Affirmative Action Plan, based on the workforce statistics from October 1998, is in progress.) Representation of women

increased in all academic job groups, except for the Professional Researcher category. There was an 11 percent increase in representation of women in Nontenured Faculty, and a 10 percent increase in Other Teaching Faculty. Minority representation grew 7 percent in the Tenured and Nontenured Faculty job groups, increasing 5 percent and 8 percent, respectively. And, the number of women in the Management (career staff) job group increased by almost 12 percent. Nevertheless, these gains are too small and too slow. We must do better than we have in the past, and we are optimistic that our increased efforts in this area will begin to improve the situation in the near future.

From 1990 to 1997, the percentages of Asian and Chicano/Latino representation in UCI's career staff work force increased by 5 percent and nearly 5 percent, respectively. Overall, there was an 8 percent increase in the representation of minorities in UCI's career staff workforce, from 32 percent to 40 percent. In most career staff job groups, the proportional representation of minorities also increased during this time period. Nevertheless, these gains are too small and too slow. We must do better than we have in the past, and we are optimistic that our increased efforts in this area will begin to improve the situation in the near future.

#### **RECOMMENDATION 4 — INFORMATION, ASSESSMENT AND REVIEW**

THE TEAM STATED, "... INFORMATION, EVEN SPLENDID RESULTS FROM PROGRAM REVIEWS, DOESN'T FIND ITS WAY INTO PLANNING AS IT SHOULD. WE RECOMMEND, THEREFORE, THAT UCI REVIEW ITS CONSIDERABLE BUT SCATTERED INSTITUTIONAL DATA AND PROCEDURES FOR APPRAISING INSTITUTIONAL EFFECTIVENESS AND INTEGRATE THESE MORE USEFULLY INTO PLANNING AND OPERATIONS."

## **UCI's Response**

This recommendation suggests the need for more systematic centralized planning that was raised directly by the first recommendation. As explained above, UCI agrees that such a need exists, and it has begun to explore ways to meet it. In particular, the new joint working relationship between the combined Academic Planning Group and the Council on Planning and Budget should create an ideal forum for the distribution of information regarding units around campus in the context of the planning process, and the Executive Vice Chancellor plans to restore a regular meeting of the deans to create a forum for the sharing of information and the discussion of campuswide issues. Nevertheless, we want to make it clear that planning at UCI is deliberately decentralized. We believe this strategy is the most effective way to keep planning closely connected to the actual research and teaching of the campus, as opposed to the top-down perspective that is so often associated with more centralized planning. The problem identified by the WASC reviewers is to some degree inevitable given this strategic choice, since units will always focus on the information most pertinent to their needs and discount the rest. Nevertheless, UCI is seeking better ways of mitigating this negative consequence of our planning strategy, and one of the most important components of that solution is the centralization of our data-gathering efforts through the Office of Analytical Studies and Information Management.

As was indicated in our 1995 report to WASC, UCI's Office of Analytical Studies and Information Management (**OASIM**) for generating and maintaining official institutional data, including student characteristics, graduation rates, and financial data. OASIM also responds to internal and external requests for special analyses,

ad hoc studies, and related information, and is responsible for sending official UCI data to the Office of the President for use in systemwide reports.

Internally, OASIM supports the information needs of campus management in several ways. For example, it regularly produces reports on student characteristics, course enrollments, faculty FTE and financial data, both for the campus as a whole and for each academic unit. Such data may be used to assess progress toward diversity goals, for example, or in Academic Senate reviews of schools and departments. The Dean of Undergraduate Education utilizes OASIM class enrollment data to monitor adequacy of course offerings (especially in impacted areas such as upper- and lower-division writing courses). The dean also uses OASIM data to monitor retention and graduation rates of Undecided/Undeclared freshmen and low-income and first-generation college students and to create or modify programs accordingly.

Data from OASIM also play a key role in enrollment planning and in financial decision-making. The Director of OASIM is a member of the Enrollment Council and reports to the Assistant Executive Vice Chancellor, Budget, thus ensuring an on-going role in both areas.

OASIM also produces a standardized set of data for each academic unit undergoing Academic Senate review. Such data include the number of majors, number of degrees awarded, student credit hours, faculty FTE, and other indicators of workload and performance. Data from OASIM greatly reduce the data collection and reporting burden for the academic units, and also those data are consistent from unit to unit and from year to year.

In addition, each year OASIM responds to numerous ad hoc requests for information ranging from “What is the academic performance of transfer students?” to “Has there been any grade inflation at UCI?” Requested data can be produced in a matter of hours, or at most, a couple of days. Results from ad hoc requests are often distributed in the form of technical reports which contain analysis (text) as well as data (tables).

Most of the data produced by OASIM is now available electronically to the campus community, on both the Web and through Gopher. OASIM has also assisted other units such as the Division of Undergraduate Education in the interpretation and analysis of such data for their own ad hoc studies and analyses. OASIM has also taken the lead among the various UC campuses in adopting the use of the Common Data Set (CDS) as a method for responding to various external surveys (such as those from *U.S. News & World Report*). Use of the CDS greatly reduces the need to generate new data for each request.

OASIM has recently added a new responsibility—that of responding to requests for information that fall under the Freedom of Information Act. Each request is carefully reviewed by OASIM and dealt with in consultation with the affected unit within the time constraints proscribed by law. As a result of this new responsibility, OASIM staff members are becoming experts in related Federal and State laws and regulations concerning Freedom of Information.

As noted in the self-study chapter on Assessment of Undergraduate Education, collecting and analyzing information is a decentralized activity, consistent with the overall structure of the University itself (see the Assessment chapter for numerous examples). Individual units, such as the [Division of Undergraduate Education](#) or [Division of Student Affairs](#), conduct their own program evaluations

and student surveys on topics and issues related to their programs. Students enrolled in courses evaluate the quality of teaching. External reviewers participate in Academic Senate reviews of schools and departments. Such information is used to make decisions at the local level, thus ensuring that the data collected will be useful and timely.

Also as noted in the Assessment chapter, due to the distributed nature of collecting and analyzing information, few results are disseminated campuswide. The Assessment self-study concluded with a recommendation that more units share their results on a regular basis. One step in this direction is the newly formed, informal, Institutional Research Group whose members represent a number of administrative offices involved in data gathering, interpretation and assessment. Another important step is the distribution of campus-wide data to the Academic Planning Group, where it is used to inform and support their deliberations regarding the allocation of FTE to the Schools.

Finally, at the heart of planning is UCI's Academic Senate review process, described in more detail in the Assessment chapter. As noted there, all academic units are reviewed on a five- to eight-year review cycle. The review begins with a self-study report containing basic information on goals and objectives, student data, etc. External reviewers review the self-study and visit the campus before summarizing their observations and recommendations in reports to the Academic Senate's Graduate Council and Council on Educational Policy. The final reports with comments and observations from the academic units and recommendations from the Councils are forwarded to the Executive Vice Chancellor for appropriate action. The Assessment chapter also includes two examples where recent Academic Senate reviews have led to specific program changes (in History and writing).

Information plays a significant role in the Senate review process. The self-study reports a unit creates provide the background and context of the review for the external reviewers (much of the data come from OASIM). When combined with observations and judgments from the external reviewer, these data form an integral part of the academic planning process at UCI.

### **Recommendation 5 — SELF-STUDY**

WHILE THE TEAM EXPECTED THE SELF-STUDY TO BE DIFFERENT FROM MOST BECAUSE OF THE SPECIAL ARRANGEMENTS APPROVED FOR THIS VISIT, ANY SELF-STUDY DOCUMENT SHOULD BE MORE ANALYTICAL THAN DESCRIPTIVE. UCI'S SELF-STUDY DOCUMENTS FOR THE LAST TWO VISITS HAVE BEEN LARGELY DESCRIPTIVE, A SITUATION WHICH SHOULD BE ADDRESSED IN PREPARING THE FOURTH-YEAR REPORT AND THE SELF-STUDY DOCUMENT FOR THE NEXT COMPREHENSIVE VISIT.

### **UCI's Response**

We have tried to address this recommendation in all aspects of the documents prepared for this review. Most generally, the identification of three themes for review provided the occasion for a broad, self-reflective analysis of those activities that are most directly related to our sense of ourselves as a research-oriented campus dedicated to graduate and undergraduate teaching within an extraordinarily diverse community. We therefore have emphasized the extent to which we join research to teaching directly through Undergraduate Research in a

Research I University. In *Improving Communication Skills at UCI*, we have devoted a theme to the challenge of maintaining a high standard of literacy on an ethnically diverse campus where only 40 percent of the incoming fall 1999 freshmen report English as the primary language spoken in their homes, 37 percent learn English and another language at home, and 22 percent come from homes in which English is not spoken. This theme exemplifies the extent to which our campus has been willing and able to identify areas in need of greater effort, and it demonstrates our resolve to commit the time, energy, and considerable resources necessary to make that effort effective. Another theme, *Assessment of Undergraduate Education*, focuses on the ways we attempt to measure the results of those efforts (and the many others underway across the campus). In addition to considering the efficacy and relevance of the various forms of assessment, this section also uses the comprehensive overview of assessment on our campus to identify several ways in which the dissemination of the assessment results can be used to support both planning both campuswide and in the different academic units.

## CHAPTER TWO: ASSESSMENT OF UNDERGRADUATE EDUCATION

In recent years, the focus of regional accrediting agencies, including WASC, has shifted from measuring the *inputs* of education, such as the number of books in the library and the size of the physical plant, to assessing the *outcomes* of education. Several factors have led to this change of focus, including increased pressure from state legislatures to require more accountability from publicly funded institutions, general complaints from employers about graduates' lack of preparation for the workforce, and questions from the public concerning the value of a diploma (Banta et al., 1996; Palomba & Banta, 1999).

To respond to these concerns, accrediting agencies have gradually changed their approach from one of assessing inputs to one of assessing outputs. What can students do as a result of their college education? What knowledge, skills and attitudes do they develop in college? To what extent have they developed life-long learning and thinking skills? In short, how effective is the educational process and what procedures or tools are in place to ensure that the educational process is effective? Understanding that each post-secondary institution is unique in terms of its mission, student body, faculty and campus culture, WASC has taken the approach of letting institutions define for themselves how to assess educational effectiveness (WASC, 1999). The purpose of this chapter, then, is to review and reflect on those policies and procedures in place at UCI that are used to assess the quality of undergraduate education and, as needed, to make recommendations for strengthening those policies and procedures.

## **ASSESSMENT AT UCI**

Assessment of undergraduate education is a regular and sustained activity at UCI. The quality of undergraduate education is a priority, and feedback—in a variety of forms and from a variety of audiences—is routinely considered when making policy or program changes. Faculty members regularly assess the quality of learning that takes place in their classes. They use information from course evaluations to modify and improve their courses. Faculty also listen to feedback from employers and graduate schools when creating new programs of study, such as majors and minors. Academic advisors routinely use diagnostic and placement information when enrolling students into courses. Administrative program directors use participant surveys, focus groups and other feedback mechanisms to determine program directions and to make improvements. The University’s entire budget process itself is information-rich; top-level administrators make budget decisions, in part, on how well units can demonstrate the need for new programs as supported by facts, figures, and other information.

At UCI, we define “assessment of undergraduate education” as the systematic collection and analysis of information for the purposes of monitoring and improving undergraduate education. Information is broadly defined to include both qualitative and quantitative data and may also include information collected from students, from electronic records, from surveys, from outside experts, and other sources. Analysis also is broadly defined to include statistical analysis, comparisons with peer institutions, expert judgment, and so on. The key component is how the information is used: any information that is collected and analyzed for the purposes of improving undergraduate education and the undergraduate experience at UCI is included in this broad definition.

At UCI, assessment of undergraduate education is a decentralized activity involving many administrative and academic units. Primary responsibility for analyzing and reporting official student data resides with the Office of Analytical Studies and Information Management ([OASIM](#)) which publishes basic enrollment, retention, and graduation information on its Website, in the *UCI Fact Card*, and in the *UCI General Catalogue*.

Promoting excellence in undergraduate education is one of the primary missions of UCI's Division of Undergraduate Education ([DUE](#)). DUE includes 10 administrative units focused on the improvement of undergraduate education:

- Center for International Education
- Campuswide Honors Program
- Instructional Resources Center
- Learning and Academic Resources Center
- Student Academic Advancement Services
- Testing
- General Studies Advising Program
- Washington (DC) Center Program
- Undergraduate Research Opportunities Program
- Office of Research, Evaluation and Grants

One of these units, [Research, Evaluation and Grants](#), routinely collects and analyzes information on undergraduate students, the undergraduate curriculum, and the Division's own programs. Since 1995, the Division has prepared the narrative component in UCI's contribution to the *UC Report to the Legislature on Undergraduate Instruction and Faculty Teaching Activities*. This annual report summarizes new and on-going efforts for the protection and improvement of undergraduate education.

The Division of Student Affairs (DSA) has primary responsibility for programs that support the co-curricular environment of the campus, such as housing, financial aid, clubs and activities, orientation, leadership training, cross-cultural activities, student health, and career advising. DSA also includes the Office of Admissions and Relations with Schools and the Registrar's Office, which are responsible for collecting and analyzing basic admissions and course enrollment information on students.

In addition to these administrative units, every academic unit at UCI and, in fact, every faculty member at UCI is involved in assessment activities related to promoting the effectiveness of undergraduate education.

#### **UNDERGRADUATE EDUCATION AT UCI**

While being an integral part of the University of California, each UC campus has formed its own educational and research identity by building on the unique talents and interests of its own faculty and its own campus culture. UCI's academic goals are explicitly stated in the 1999-2000 *UCI General Catalogue* (page 6):

UCI offers programs designed to provide students with a foundation on which to continue developing their intellectual, aesthetic, and moral capacities. Programs and curricula are based on the belief that a student's collective University experience should provide understanding and insight which are the basis for an intellectual identity and lifelong learning.

To accomplish these goals, UCI has established 10 independent academic units (the Schools of the Arts, Biological Sciences, Engineering, Humanities, Management, Physical Sciences, Social Ecology and Social Sciences; Departments of Education and Information and Computer Science) and eight interdisciplinary study programs that provide both undergraduate and graduate education and conduct research. Although this report focuses on undergraduate education, it should be made clear that the quality of both undergraduate and graduate education is intrinsically related. That is, as the quality of graduate education is increased, there is a corresponding increase in the quality of undergraduate education. Undergraduate education benefits from having outstanding graduate students as well as outstanding faculty.

As of 2000-01, UCI offers 55 undergraduate [majors](#); 50 undergraduate minors; numerous concentrations and specializations; honors opportunities for high-achieving students; faculty and staff advising programs; education abroad and other international education opportunities; a Washington (DC) Center program; and opportunities for undergraduate research as well as community service.

One distinguishing feature of undergraduate education at UCI is its general education breadth requirement which *all* UCI undergraduates (regardless of school or major) are required to fulfill. The intent of the breadth requirement is to introduce students to the basic modes of thought that characterize academic disciplines. To fulfill the [breadth requirement](#), students typically take a three-quarter sequence in each of five areas: Writing, Natural Sciences, Social and Behavioral Sciences, Humanistic Inquiry, and Mathematics and Symbolic Systems. Students may also be required to take additional course work in two more areas, Language Other than English and Multicultural Studies and

International/Global Issues, depending on their entering level of preparation and their course selections within the first five breadth areas.

As noted in a separate chapter, undergraduate education at UCI also emphasizes student participation in independent study, research, or similar creative endeavors as a supplement to the undergraduate program. Again, graduate students and faculty are key players in such programs.

### **ACADEMIC REVIEW PROCESS**

The primary assessment tool is the academic review process that is established and carried out by the Irvine Division of the Academic Senate. The Senate has sole responsibility for initiating, approving, and reviewing all academic programs at UCI, including whole academic departments and schools, all majors and minors and other programs of study, and all degree requirements. To ensure the quality of such programs, two sets of procedures are in place: the academic program approval process and the academic review process.

#### **The Academic Program Approval Process**

The Academic Senate has sole responsibility for review and approval of all new majors and minors, concentrations and specializations, and of every course that is offered at UCI.

Before an undergraduate course can be taught or listed in the *UCI General Catalogue*, it must be approved by the Academic Senate's Action Committee on Courses. This committee, composed of faculty representatives from each academic unit, reviews the description of the course, its proposed syllabus, and

the homework and examination requirements, and makes sure the course is defensible from an academic as well as intellectual point of view (that is, how it fits into the current curriculum and what its intellectual foundations are). Courses proposed for UCI's general education breadth requirement go through an extra level of review; that is, these courses must be approved by the Council on Educational Policy (CEP) as well as the Action Committee on Courses.

Similarly, new majors and minors go through an approval process that focuses on the academic integrity and coherence of the proposed program. Development of a new major or minor begins with a group of faculty who see a need for the program and are interested in offering courses for the new major. A faculty committee creates a proposal that is reviewed first by the department and then by the school in which the major or minor will be housed. Next, comments are obtained from other schools and departments that might be impacted by the new major, and changes or modifications are made as needed. The proposal is then submitted to appropriate Academic Senate committees for review and approval, and then to the Senate's Divisional Assembly for final approval.

### **The Academic Review Process**

Undergraduate programs in each academic unit are reviewed by CEP every five to eight years. Until 1999, undergraduate and graduate reviews were separate activities, a division instituted initially to assure full and appropriate attention to undergraduate issues. Graduate reviews were conducted independently by the Graduate Council. In spring 2000, a pilot review combining both undergraduate and graduate reviews was conducted in the School of Physical Sciences by a joint committee of CEP and the Graduate Council. A similar joint review of the School of Biological Sciences is planned for 2001. Merging the two

sets of reviews would, in part, reduce the data collection and analysis burden on the academic units.

In any given year several reviews may be in process. Members of CEP and Graduate Council oversee the reviews and select the external reviewers (usually faculty members from similar disciplines at other research institutions). The academic unit being reviewed prepares a self-study that includes enrollment data, graduation rates, comments from alumni and employers, and other indicators of success. The self-study may include feedback collected from students and alumni using surveys or focus groups. The external reviewers review the self-study documents and then spend two to three days on site collecting their own information from students, administrators, and other faculty members. After the site visit, members of the external review committee draft their report. The final report, with comments and observations from the academic unit and recommendations from CEP and Graduate Council, is forwarded to the Executive Vice Chancellor for appropriate action.

Similarly, an academic review process exists for each of the general education breadth categories, such as Writing, Natural Sciences, Humanistic Inquiry, and Multicultural and International Studies. Again, CEP oversees the review process, which includes external reviewers who assess the coherence and quality of the courses offered for that category. These reviews also typically occur every seven years.

Information collected during the academic review process has been used to produce significant changes in undergraduate education. One recent example comes from the Department of History, which was reviewed as part of the School of Humanities external review in 1998-99. As part of the self-study, feedback

regarding courses and the curriculum was collected from students in large-enrollment history classes. The faculty also reviewed course enrollment trends in other schools and departments. In general, although course enrollment was strong, the number of History majors was not growing. A closer review of their lower-division survey courses and upper-division course offerings led the History faculty to reconsider the number and type of courses being offered, which resulted in fewer introductory survey courses and more upper-division courses. The faculty also decided to offer more historiographic courses, partly to attract more students to the major. Students' comments also prompted the faculty to revamp their outreach efforts to undergraduates; there is now in place a very active History Undergraduate Student Association which sponsors colloquia and related field trips.

Similarly, reviews of breadth categories have brought about changes. For example, the two recent reviews of upper-division writing (1996-97) and lower-division writing (1997-98) led to the creation of an ad hoc committee chaired by the Dean of Undergraduate Education. The committee was charged with responding to the two review reports and the Council on Educational Policy's analyses of them with recommendations to the Executive Vice Chancellor on administrative actions to improve the teaching of writing at UCI. In response to the ad hoc committee's report, the Executive Vice Chancellor approved and funded a new campuswide faculty position in Rhetoric and Composition to provide oversight for both lower- and upper-division writing programs. Other responses are described in the chapter on Improving Communication Skills at UCI.

## **THE ACADEMIC PERSONNEL REVIEW PROCESS**

In addition to the academic approval and review processes, the Academic Senate, through its Council on Academic Personnel, also coordinates the academic personnel review process and its required evaluation of every Senate member at regular intervals. This process is a key factor in ensuring the quality of teaching as well as the quality of research at UCI. All Senate faculty are formally reviewed by the Senate and central administration at two- to five-year intervals (depending on rank) for the purposes of possible promotion and advancement. These merit reviews (often supplemented by external letters and recommendations of ad hoc committees, including members from outside UCI) of course entail a close look at a faculty member's research, but the area of teaching also is a mandatory part of the review process. To this end, faculty are asked to submit teaching evaluations and other evidence of good teaching, such as teaching portfolios, as part of their merit reviews. This information, along with a review of the faculty member's research and service, is taken into account in the committee's recommendation to grant, or not grant, a merit increase or a promotion.

## **EXTERNAL ACCREDITATIONS**

Many of UCI's academic programs are accredited by discipline-specific associations, including:

- American Chemical Society (undergraduate degree program in chemistry)
- National Association of Schools of Theatre and University/Resident Theatre Association (Department of Drama)

- California Commission on Teacher Credentialing (credential programs in the Department of Education)
- Accreditation Board for Engineering and Technology (majors in Aerospace, Chemical, Civil, Computer, Electrical, Environmental, and Mechanical Engineering in The Henry Samueli School of Engineering)
- The International Association for Management Education (AACSB) (Graduate School of Management)
- National Planning Accreditation Board (master's program in urban and regional planning)
- American Board of Genetic Counseling (master's program in genetic counseling)
- Association of American Medical Colleges and American Medical Association (M.D. program in the UCI College of Medicine)

To become accredited, each of these academic programs must meet certain standards established by the accrediting board and undergo periodic reviews by external committees.

For example, the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET) accredits UCI's undergraduate degree programs in engineering. To prepare for the next review, The Henry Samueli School of Engineering is in the process of collecting information from various constituent groups (e.g., faculty, students, employers, alumni); reviewing the undergraduate curriculum in relation to specific skills and knowledges that ABET requires to be taught; and making changes as needed based upon this information. To date, faculty committee groups have been formed; focus groups with students, alumni and employers have been held; and surveys are being

created and administered. More information on the ABET accreditation process may be obtained from the Associate Dean for Student Affairs in The Henry Samueli School of Engineering.

#### **INSTITUTIONAL RESEARCH**

Institutional research is an ongoing assessment activity as well. Basic information on students who apply to and enroll at UCI is collected through the Office of Admissions and Relations with Schools and the Registrar's Office. From 1990 to 1999, data from Admissions and the Registrar have been made available to authorized individuals as part of a campuswide computer system called SINET, which contains basic demographic and transcript information, course grades, SAT scores, and other academic information on each student enrolled at UCI. Student data can be downloaded from SINET into locally developed databases for further analysis. A password protection system ensures that only authorized individuals have access to the SINET student database.

Official enrollment statistics and data on the characteristics of enrolled students are released quarterly by the Office of Analytical Studies and Information Management (OASIM). Annual reports are also produced by OASIM on first- and second-year retention rates as well as four-, five- and six-year graduation rates of each entering class. From time to time, OASIM also conducts special analyses of enrolled students at the request of academic and administrative units. Here are some recent examples of such reports (copies may be obtained from OASIM):

- Students with High Numbers of Units Completed at Graduation, 1994-95 Graduates (Report P2427)

- SAUSD and RSC Graduation Rates – Urban Partnership Program (Report P2642)
- The Henry Samueli School of Engineering Historical Data Request (Report P2645)
- Comparative Information on English Undergraduate and Graduate Programs (Report P2875)
- Academic Program Review: Physical Sciences (Report P3174)
- Engineering Majors Time to Degree (Report P3214)

Additional institutional research studies are periodically conducted by the Division of Undergraduate Education. For example, its Office of Research, Evaluation and Grants regularly monitors capacity and enrollment in breadth and other key courses; this information is used by the Dean of the Division of Undergraduate Education (DUE) to alert academic units to potential problems and to obtain and allocate sufficient resources to meet enrollment demands. The Division also monitors average course grades at the department and school levels to identify any potential problems related to grade inflation.

The Division of Student Affairs also conducts institutional research studies. The Office of Admissions and Relations with Schools (OARS), for example, periodically conducts validity studies of the admissions selection criteria as well as research on the relationship between preadmissions academic measures and college performance. The Office of Admissions also collects and analyzes information on new students collected through the Admitted Student Questionnaire Plus (administered at the same time as the SAT). Such information is used to obtain a better picture of the types of students who choose to enroll at UCI.

## EVALUATION OF NEW ACADEMIC PROGRAMS

UCI has a history of trying out and evaluating different approaches to undergraduate education. In recent years, the campus has received several large grants that promote the improvement of undergraduate education. One such example is an National Science Foundation (NSF) grant for the improvement of science, mathematics, engineering, and technology (SMET) education. Funding from this NSF grant was used to support the development and evaluation of several new courses, including an engineering course for non-majors, a calculus course for unaffiliated students, and two new teacher education courses. Program evaluations included classroom observations, student surveys and focus groups, statistical analysis of final course grades, the monitoring of changes of major, and an in-progress longitudinal analysis of student achievement in subsequent courses.

The Department of Physics recently undertook a complete revision of its undergraduate curriculum. The revised program is designed to accommodate a wide variety of eventual career paths; in fact, all Physics majors select a specialty (or “track”) and meet regularly with their track advisor. Available tracks include a professional track, specializations in astrophysics or computational physics, an applied physics track, and a K-12 teaching track. With assistance from DUE, course evaluations and focus groups were conducted during the first year of the new curriculum to provide formative feedback to the course developers. These new courses are now being offered for other majors. Additional funding from the NSF SMET grant is assisting with the expansion of the introductory courses to include other majors, including engineering majors.

Since 1997, the Office of Research, Evaluation and Grants has been conducting evaluation studies that compare traditionally taught introductory economics courses with a new version taught completely in cyberspace (using CD-ROM lectures, on-line discussion groups, an electronic bulletin board, electronic quizzes, and a course Website). Evaluation results comparing traditional learners to cyberlearners show that both groups performed equally well on final exams and that they were equally satisfied with the overall quality of their courses (Navarro & Shoemaker, 1999). This year, cyberversions of introductory economics courses are being offered to undergraduates for the first time, a decision that was based in part on the earlier evaluation results. A similar evaluation study is currently underway that will assess how well students do in this year's cybersections compared to those who enrolled in the traditional sections.

Another example of how evaluation has moved a pilot program into the regular curriculum is provided by the evaluation of extended orientation programs for undecided/undeclared programs conducted by the Office of Research, Evaluation and Grants (Shoemaker, 1995). Its purpose was to evaluate the effectiveness of an experimental, two-quarter, extended orientation and advising program for new undecided students. The study was conducted in fall 1994 and undecided students comprised 28% of the new freshman class, effectively the largest "major" on campus. Student outcome variables were collected at the end of the pilot study, including GPAs, number of units completed, Subject A status, and retention (defined as "still enrolled"). A "value added" analysis, as suggested by Astin (1991), was used to compare actual and predicted GPAs. The evaluation found positive results: undecided students attending the course for one or more quarters during the pilot study obtained significantly higher GPAs and units by the end of the freshman year, and their GPAs were higher than expected. Results from the evaluation were used to expand the pilot program the following year to all

undecided students. The course is now a regular part of the curriculum for undecided/undeclared students.

### **ASSESSING THE QUALITY OF TEACHING**

In 1996-97, the Senate Action Committee on Teaching (formerly known as the Committee on Teaching Quality) proposed and developed a new teaching evaluation form that would be less confusing to students, would provide better and more consistent information to academic personnel committees, and would make a public statement about what constitutes good teaching at UCI. After reviewing course evaluation forms used at UCI and elsewhere and reviewing the research literature on effective teaching, the committee members developed a new form based on 10 key factors related to good teaching. They also adopted a letter grade rating scale (A to F) rather than a numeric rating scale, reasoning that students were more familiar with letter grades and would use them more accurately than arbitrary numerical scales.

Two pilot studies were conducted to assess the reliability and validity of the new course evaluation form. A study conducted by The Henry Samueli School of Engineering comparing old and new forms concluded that there was considerable overlap in terms of content and that results on the new form were fairly consistent with those on the old form. A Division of Undergraduate Education research study concluded that students seemed to grade more generously (i.e., more positive) when they used letter grades than when using numerical rating scales and that there was a positive correlation between ratings using letter grades and those using numbers. Results from both studies were presented at a campuswide Teaching Colloquy.

Subsequently, the Academic Senate endorsed use of the new form and recommended that academic units adopt it for course evaluations. Currently, the Schools of Biological Sciences, Engineering, and Physical Sciences, the Program in Film Studies and selected courses in the School of the Arts have adopted and are now using the new course evaluation form. To familiarize students with the new form, a copy of the Campuswide Teaching Evaluation Form is published quarterly in the *Schedule of Classes*.

To assist students in the selection of courses, the [Associated Students of UCI](#) (the student government association) publishes the *Teacher Evaluation and Course Handbook (TEACH)* which contains summaries of course evaluation surveys, obtained by permission from the academic units. *TEACH* is published annually and is distributed free of charge to all students.

For faculty members who would like more feedback and guidance on how to modify or improve their teaching strategies, the Division's Instructional Resources Center (IRC) offers mid-term assessments that collect information using videotapes and student surveys. Results from the assessment process, plus suggestions for improvement, are shared confidentially with the faculty member. IRC also sponsors quarterly Teaching Colloquies that focus on different pedagogical techniques and may include guest presenters from other campuses. All faculty are invited to attend these Teaching Colloquies. For example, about 100 faculty and staff members attended the Winter Quarter Teaching Colloquy on Problem-Based Learning (PBL) with Dr. Deborah Allen, a national expert on PBL from the University of Delaware.

A new grant from the Hewlett Foundation awarded to the Division of Undergraduate Education in 1999 is helping faculty incorporate problem-based or

inquiry-based learning into general education breadth courses. IRC is again taking the lead on this faculty-development project. Formative as well as summative evaluation activities will be coordinated by the Office of Research, Evaluation and Grants. Data will be collected from students and faculty to assess changes in pedagogy, student learning, and student engagement in learning.

### **ASSESSMENT OF NEW STUDENTS**

Students' academic performance in the undergraduate years is regularly monitored with the usual indicators, beginning with the administration of diagnostic and placement exams for new students. These exams, including the systemwide [Subject A exam](#), a diagnostic test used to place students in appropriate English composition courses, are developed (or selected, in the case of nationally standardized exams) and graded by faculty members who also establish the placement criteria.

At UCI, in addition to the Subject A exam, new students may be required to take placement exams in chemistry, physics, mathematics, foreign languages, and/or English as a second language (ESL), depending on their majors and their level of academic preparation. All new students receive a detailed brochure describing the placement tests and the testing schedule. Tests are administered during the summer as well as throughout the academic year to meet the enrollment needs of students. Detailed diagnostic and placement results from the exams are provided to students and academic counselors to ensure that students enroll in the courses best suited to their skills and level of preparation.

Each summer orientation programs for new freshmen and for new transfer students are evaluated by the Office of Research, Evaluation and Grants. Both

students and parents are asked to provide feedback to the directors and staff of the orientation programs on the quality and usefulness of different components of the programs. Additional data are collected from those who stay in the residence halls during orientation and from students attending certain discussion sessions; results from these surveys are used to ensure the quality of services delivered by student staff members.

Periodically, UCI conducts comprehensive surveys of new students. In recent years, the following surveys have been administered to learn more about the attitudes, opinions, and special skills of new students:

- *New Student Survey, 1995* (published by the American Council on Education and UCLA's Higher Education Research Institute; administered and analyzed by UCI's OASIM). Periodically, each of the UC campuses participates in this annual, national survey of the attitudes, opinions and plans of new students. In 1995, UCI joined with other UC campuses in adding additional survey items related to plans for bringing or purchasing a personal computer in the first year at UCI. A summary of the survey findings indicated that about two-thirds of the respondents indicated they expected to have a personal computer that fall; a similar number agreed that "computers are easy for me to use" (Selegan, 1996).
- *New Student Survey, 1998*. A repeat of the 1995 survey of entering students indicated that UCI was the first choice for almost 60 percent of the respondents (a response rate of 23 percent). When asked what influenced their choice of UCI, 56 percent noted its good academic reputation, 47 percent noted that its graduates get good jobs, and 34

percent noted that graduates go to top graduate schools. Approximately 20 percent of the respondents indicated they planned to obtain a master's degree and 4 percent indicated that they plan to obtain a doctorate. The 1998 administration of the New Student Survey was sponsored by the Division of Student Affairs. Further analyses of the results will focus on comparisons between UCI and other highly selective public universities and on differences between the 1995 and 1998 results from UCI students.

- *Informatics Readiness Survey of New Students, 1998* (created and administered by the Office of Academic Computing, now called Network and Academic Computing Services-NACS; the UCI Libraries, and the Division of Undergraduate Education). The purpose of this survey was to determine how well new students were prepared to use computer-based resources as part of their academic study at UCI, and to identify the types of computer training that they might need. For comparison purposes, some of the survey items from the New Student Survey of 1995 were repeated. Administered during the summer advising period by the academic units, the 1998 survey had a 50 percent response rate (Shoemaker & Franklin, 1998).

Compared to the freshman class of 1995, the freshman class of 1998 was more likely to have a personal computer during the first year at UCI and was slightly more confident about their computer skills. About 60% of the 1998 freshman class was “plugged into” the Internet on a regular basis, already had an Internet service provider (ISP), and accessed the Web at least once a week. To learn more about computers, the most freshmen's most popular method was learning

from friends, followed by learning as part of a course and learning on their own. The topic which attracted the largest percentage of students (57%) was learning more about the on-line catalogs of the UC Libraries. Information from this survey has been used to redesign computer workshops for students.

- *Characteristics of newly admitted students* are weekly reports organized by class level, academic unit, and ethnicity, and produced by the Office of Admissions and Relations with Schools. This information is extremely useful for academic planning and advising.

#### **ASSESSMENT OF ENROLLED STUDENTS**

Academic progress of [enrolled students](#) is assessed in a variety of ways including the usual array of techniques such as regular course examinations, written assignments, research projects and in many instances, a capstone experience such as a senior thesis, participation in an honors program, senior seminars and examinations, senior design projects (in engineering), or recitals or exhibitions (in the arts programs). Capstone experiences, in particular, are employed to assess students' mastery of course material and their ability to integrate the material learned in several courses into a meaningful whole. These capstone experiences, many of which are unique to the research university setting, are described more fully in the chapter on Undergraduate Research Opportunities at a Research I University.

Students' academic progress is carefully monitored by academic advisors in each student's school or major. Students who are encountering difficulties receive special attention. Each academic unit receives quarterly lists of students whose

GPA's and/or number of units completed indicate they are subject to probation and disqualification. Depending on the academic unit, this list may trigger a letter to the student, a required advising visit with a counselor or faculty advisor, or a recommendation to seek tutoring or other supplemental academic assistance, which are readily available on campus.

The Henry Samueli School of Engineering has recently implemented an additional assessment tool for students who receive probation counseling. As part of the counseling they receive, students are asked to complete a learning styles inventory. Results from the inventory are then discussed with the student and used to make recommendations on modes of learning and study methods that best fit the student's learning style.

Characteristics of enrolled students are carefully monitored. OASIM provides quarterly information on number of students enrolled and their characteristics (age, gender, ethnicity, class level and academic unit). This information is broadly shared with faculty, administrative staff, and the public through the OASIM Website, the *UCI Fact Card* and the *UCI General Catalogue*. These data form the core of student information that is regularly used for planning and budgeting related to undergraduate education.

Surveys of enrolled students are administered periodically in response to current issues. For example, in spring 1997 OASIM administered a Web-based Campus Experiences Survey. Although the response rate was fairly low and students in the sciences were slightly overrepresented, this survey was useful for several reasons: (1) it demonstrated the cost-effectiveness of using Web-based surveys of students, and (2) the findings confirmed that students gave consistently high importance to developing problem-solving skills, skills needed for employment,

and effective speaking skills (Selegean, 1998). Since that time, the campus has implemented several other successful Web-based surveys in several areas, such as the evaluation of the on-line economics courses described above previously.

In spring 1999, the Division of Student Affairs administered the *Student Opinion Survey* which was modeled after UC San Diego's *Quality of Campus Life: A Student Opinion Survey*. The survey asked about participation in campus life (frequency and satisfaction with services), opinions on academic issues, and background characteristics. In terms of level of satisfaction, the top five choices of respondents were: the Student Center, the Registrar's Office, New Student Orientation, Admissions Office, and Clone Notes. Results are still being reviewed by Student Affairs and by the Division of Undergraduate Education.

Retention and graduation rates of currently enrolled students are produced annually by OASIM. These reports typically report one- and two-year retention rates and four-, five- and six-year graduation rates for various cohorts of freshman classes. As requested, special analyses of retention and graduation rates are calculated for groups such as athletes (results are published in the *UCI General Catalogue*), undecided/undeclared students, and others. Such information is extremely helpful in shaping academic support programs.

Retention and graduation data are also used routinely for external audiences, such as *U.S. News & World Report's* rankings. For example, in 1999, UCI was rated first in the country in "value-added" or graduation rate performance. This analysis indicated that UCI had higher than expected graduation rates based on students' entering SAT scores and high school GPAs. Another external audience is the National Collegiate Athletic Association. As part of our NCAA Division I

status, UCI reports annually on cumulative graduation rates by intercollegiate sport.

Students who leave without graduating are asked to complete a short exit survey administered by the [UCI Ombudsman Office](#). The purpose of this confidential survey is to identify and understand the various reasons why students withdraw without graduating. Typically, students report personal and financial problems more frequently than academic problems as a determining factor in leaving the institution. For example, during 1998-99, about 450 students completed the exit survey. The top three reasons for students who withdrew during fall quarter were medical, financial, and family responsibilities. As appropriate, summaries and general trends from these surveys are shared with associate deans, senior academic counselors, and others.

## **EVALUATION OF CAMPUS SERVICES**

Academic support programs and co-curricular programs are routinely evaluated by students and other client groups. Information from such evaluations is collected and analyzed by the cognizant unit so that improvements may be implemented as needed.

The Division of Undergraduate Education routinely collects information on students who use its programs. For example, during the 1995-96 academic year, 57 percent of the new freshman class participated in one or more academic support programs provided by the Learning Skills Center, Tutorial Assistance Program (these two units are now combined into the Learning and Academic Resource Center [[LARC](#)]), and Student Academic Advancement Services

(SAAS). The largest groups of new freshmen using these services were [undecided/undeclared](#) students and Biological Sciences majors.

In addition, the Division of Undergraduate Education routinely collects evaluation data. For example, LARC regularly administers student surveys at the end of its workshops and at the end of each tutoring program. Results from these surveys are used by the program managers to revise and improve the programs as needed, and to assess the effectiveness of tutors and other instructors. The Division's [General Studies Advising](#) program for undecided/undeclared students regularly evaluates its course, University Studies 1A-B, and the students who lead the course discussion groups. The Division's [Testing Office](#) also conducts periodic surveys of students who take placement exams to assess how well students understand the testing requirements as well as the test administration information. The California Alliance for Minority Participation ([CAMP](#)), a Statewide initiative funded by NSF that seeks to increase the quality and quantity of minority students receiving baccalaureate degrees in science, engineering and mathematics, also is regularly evaluated. Each year, tables are generated regarding participation and graduation data by major, ethnicity and gender. Informal feedback from participants also is collected at CAMP workshops and seminars. The number of CAMP UCI graduates has increased 78%, from the 1999-91 baseline year to the 1997-98 graduating class.

Units within the Division of Student Affairs also routinely collect feedback information from students using its services. To encourage students to provide feedback, most units such as Financial Aid [Financial Aid](#) and [Student Health](#) provide short evaluation surveys at the point of service – that is, at the front desk or other convenient location. Responses from these surveys can be analyzed by gender, ethnicity, major, and residence (on or off campus) and are used for

program improvements. Workshops such as “Immigration Update and Visa Training” by International Student Services and Residential Life Training are evaluated using participant surveys; typically, these surveys ask the participant to rate the quality of the presentations, to rate the overall usefulness of the information presented, and to make suggestions for improving the workshop. Periodically, the housing units such as Arroyo Vista and Middle Earth conduct needs assessment surveys to determine how well existing programs are working and to obtain suggestions for new programs. Additionally, Student Affairs conducts evaluations of courses that it sponsors, such as Psychology 11E: Social Psychology of Higher Education (taught by the Dean of Students).

#### **ASSESSMENT OF POST-BACCALAUREATE OUTCOMES**

UCI both performs alumni surveys and collects information on student MCAT scores (Medical Colleges Admission Test).

The campus periodically administers surveys to students who have graduated from the university. For example, students who graduated in 1993-94 with a baccalaureate degree were surveyed by the [Career Center](#). Results from that survey, described in the report *Beyond the Bachelor's Degree: Career Survey Results of 1993-1994 Graduates* (available from OASIM), indicate that about 31 percent of those surveyed were continuing their education one year after graduation. Of those who were working, the largest percentage (26 percent) was employed in human services, followed by technical fields (21 percent) and sales and marketing (14 percent).

Due to funding constraints, no alumni survey has been conducted by the UCI Career Center since the mid-1990s. However, in 2000, the Center launched an

annual on-line, Web-based survey to solicit data from Class 2000 graduates. Participation in this rolling survey will be invited from April 1 through October 31, 2000. Since UCI maintains student e-mail address for six months post-graduation, Class 2000 graduates will have the opportunity to complete the survey whenever career plans are launched, jobs are negotiated, or graduate admissions obtained. The goal of this survey is to provide the campus with career-related information, such as part-time or full-time employment, salary information by function and industry, graduate school admission data, and “actively seeking work” data. The data will be used by UCI’s academic units and administrators for reports to external agencies.

Some academic units also administer their own alumni surveys. For example, the Department of Information and Computer Science (ICS) administers an annual survey of its baccalaureate graduates. The five-part survey includes sections on (1) the quality of the undergraduate program (courses, preparation for a career or graduate school, academic advising, availability of computers, etc.), (2) immediate work plans, (3) graduate school plans, (4) interest in returning to campus to share experiences with current students, and (5) a blank space for additional comments. Similar alumni surveys are administered periodically by the School of Biological Sciences, The Henry Samueli School of Engineering, the Women’s Studies Program, and the Department of Physics, among others.

UCI’s Campuswide Honors Program ([CHP](#)) has its own alumni association and regularly communicates with its alumni through regular newsletters (two to three per year), messages using a ListServ, and invitations to events for the alumni and for alumni and students together. The purpose of the alumni group is to encourage alumni to continue their contacts with each other and with CHP, and to continue to support a sense of community. Many of the alumni attend CHP events on campus and have helped with recruitment of new students. From these

various formal and informal contacts with alumni, CHP has received valuable feedback regarding its programs and services.

The School of Biological Sciences routinely collects information on its students' scores on the Medical Colleges Admission Test (MCAT) which is required for admission to medical school.

### **CONCLUSIONS AND RECOMMENDATIONS**

Assessment of undergraduate education is a regular and sustained activity at UCI. Assessment of learning takes place in every classroom and with each capstone experience. Assessment of teaching regularly takes place in every course. Assessment of new, continuing and graduating students takes place regularly. Assessment of courses, majors and minors is conducted regularly by the Academic Senate. And assessment results are routinely used to monitor and improve academic and related programs.

Assessment activities are distributed throughout the campus and have become a regular part of "doing business" at the University. New programs are carefully evaluated and institutional research studies are conducted. Program participants are regularly surveyed. Data are collected and analyzed and form an integral part in the budget allocation process. UCI is a "data-rich" organization – that is, one which collects and uses many types of assessment information to continually modify and improve its educational programs.

In recent years, UCI has made significant progress in the area of assessment. For example, OASIM is now completely integrated into the academic review process; it provides basic information (enrollments, student credit hours, average SAT

scores, graduation rates, etc.) for each academic unit being reviewed. Distribution of basic information about the institution and its students is routinely published by OASIM on the Web and the annual *Fact Card* publication. The Registrar has developed SINET, a campuswide student database. The Division of [Undergraduate Education](#) recently created a comprehensive student database that integrates data from [Office of Admissions and Relations with Schools](#), the [Registrar](#), [Financial Aid](#), and the Division's academic support programs. The database is used by DUE to generate information needed to inform decisions related to evaluation of programs and development of new academic policies. In addition, The Henry Samueli School of Engineering has launched a comprehensive assessment program in preparation for its ABET accreditation process.

Although we do an enormous amount of assessment at UCI, we could be more systematic and coordinated in our assessment efforts and we could share our findings more broadly. Below are some suggestions that the campus may want to consider to achieve these goals:

- 1. Consider forming a campuswide task force or committee to continue the discussion regarding assessment of undergraduate education.*

Discussions regarding assessment of undergraduate education should continue. To ensure that such conversations take place and to open up the dialogue to a wider group, the campus may want to consider forming a campuswide task force or ad hoc committee on the assessment of undergraduate education. The charge to the task force might be to reach some consensus regarding the purposes of assessment and its place in the undergraduate program, the reasons for doing it, what costs and benefits

are associated with it, how it might be done, etc., and to make recommendations, as needed, for more systematic assessment of undergraduate education. For example, should the campus institute more capstone experiences that by their very nature require students to demonstrate critical thinking and analysis skills across several courses? Should students be asked to demonstrate their writing and speaking skills before they graduate? What role might student outcomes play as part of the academic program review process?

These are complex questions with complex answers. It may be difficult to form consensus and to agree on recommendations. However, given the change in focus of most accrediting groups, including WASC, from inputs to outputs, the campus should consider undertaking a serious discussion of such topics.

The Dean of Undergraduate Education could serve as chair of the task force. Members of the task force might include the associate deans for undergraduate education, other faculty members, academic counselors, and staff members with expertise in assessment or evaluation, such as those who belong to UCI's informal Institutional Research Group. Final recommendations from the task force could be forwarded to the Executive Vice Chancellor, the Academic Senate or other entities, as appropriate, for implementation.

***2. Consider conducting regular, periodic surveys of entering, continuing and graduating students.***

This report found many examples of surveys for new, continuing and graduating students, but few if any were coordinated in a way that would make longitudinal studies possible. How do students' attitudes change during college? What out-of-class experiences seem to be related to academic success? What are the entering characteristics of students who graduate in a timely fashion? What out-of-class experiences seem to be the most valuable? How well does the undergraduate program prepare students for the workplace or for life-long learning? These and many other questions could be answered through a series of coordinated student surveys.

One concrete suggestion is to explore available assessment tools that provide an integrated approach to surveying new, continuing and graduating students. For example, the American College Test group ([ACT](#)) has developed a series of survey instruments for all three populations that contain some of the same survey items and themes at all three levels. The Educational Testing Service ([ETS](#)) has developed the Academic Profile for assessing outcomes of general education. UCLA's Higher Education Research Institute has a similar set of surveys. Standardized, nationally administered instruments have the added advantage of comparable results, or norms, based on similar institutions, and usually have the flexibility for institutions to add some of their own survey items.

Another suggestion is to consolidate alumni surveys wherever possible. Several administrative offices as well as academic units are interested in surveying students who graduate from UCI. At a minimum, the campus should begin collecting career and graduate school placement information

from recent alumni, as is planned with the new Web-based Career Center surveys. Additionally, information regarding general academic satisfaction as well as learning outcomes information should be collected on a regular basis. Preliminary meetings for consolidating surveys have already taken place among University Advancement, the Alumni Association, the Career Center, OASIM, and the Division of Undergraduate Education. These discussions should continue.

Finally, a regular schedule of administration could be adopted. For example, major surveys of new freshmen could be done every three years, alumni surveys on alternate years, etc. Currently, there is no campuswide schedule for administering such surveys. Coordination of student surveys will require cooperation among administrative and academic units as well as the addition of resources for the purchase, administration and analysis of the surveys. Such a project could also lay the foundation for closer cooperation among the various campus units that currently conduct institutional research and evaluation studies. Closer cooperation of these units would benefit the campus as well, since duplication would be reduced and technical expertise could be shared.

**3. Consider disseminating results of effective practices more widely.**

Due to the distributed nature of assessment practices at UCI, few results are disseminated campuswide. As appropriate, more units should share their results on a regular basis, preferably using the Web. When research studies or evaluations are repeated, results from prior years also should be published on the Web. Other means of distributing results are quarterly forums for faculty and staff (such as those previously sponsored by OASIM) as well as selected campuswide publications, such as the *UCINews* (the campus newsletter for faculty and staff), the *UCI Journal* (a periodic newspaper for the campus and community-at-large) or the *SMET Newsletter*.

In making this recommendation, it is clearly understood that not all results of institutional research studies or program evaluations can or should be publicly released. For example, whenever confidential information is collected or individual participants or program leaders can be identified, it would not be advisable to release the information widely. As in all things, good judgment and discretion are required.

Disseminating results of successful practices is another way of bringing together the various units involved in institutional research and evaluation. Again, this would benefit the campus in the long run by reducing duplication and enabling technical expertise to be shared across units.

In addition to these suggestions, there are other resources on assessment, such as “The Principles of Good Practice for Assessing Student Learning,”

developed by the Assessment Forum of the American Association for Higher Education (AAHE, 1992). These principles are similar to the principles of good practice in undergraduate education developed by Chickering and Gamson (1987). A tenth assessment principle was later suggested by the authors of *Assessment in Practice* (Banta et al., 1996) who reviewed over 165 case studies of assessment in higher education. These and other resources on assessment can help frame further campuswide discussion of assessment issues.

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## **CHAPTER THREE: UNDERGRADUATE RESEARCH OPPORTUNITIES IN A RESEARCH I UNIVERSITY**

UC Irvine is among a small number of U.S. higher education institutions that are classified as Research I universities by the Carnegie Foundation. By definition, Research I universities offer a full range of baccalaureate programs, are committed to graduate education through the doctorate, and give high priority to research. The major focus of these universities is *research*—faculty members conduct research, they seek outside funding for research, they provide research training for graduate students, and they share the results of research with colleagues and the wider community of scholars. The achievement of an academic position, tenure, and movement through the faculty ranks all depend on the positive assessment of the faculty member’s research accomplishments as determined by his/her department, school, and the campus at large. Research skills and research accomplishments are the very foundation of the faculty’s success as peer-reviewed scholars who pursue research and disseminate the results.

This chapter of the self-study describes how UCI encourages and supports opportunities for undergraduate students to engage in research and related inquiry-based or creative activities, and how those opportunities have expanded during the years since UCI’s last WASC review. The chapter describes:

- the size and scope of undergraduate research activities
- campuswide and school-based undergraduate research programs
- campuswide and school-based honors programs that require research or similar creative activities
- new initiatives and use of small classes to promote inquiry-based learning

- methods for recognizing excellence in teaching

## **DEFINING “RESEARCH”**

At the University of California, “research” is defined very broadly. Research is characterized by the inquiry, investigation and discovery process which often leads to the discovery of new knowledge, insights, and understandings about ourselves and our world. It includes the scientific method of hypothesis testing and experimentation as well as analytical and interpretive activities in the humanities and social sciences. It also includes creative and artistic endeavors in the arts. Results of research may take the more traditional forms of articles in scholarly journals, books and manuscripts, course materials and textbooks, or less traditional forms such as performances in the arts (in drama and dance, for example), creations of artistic expression (such as paintings and sculpture), or electronic and other multi-media materials (such as Websites, electronic journals, or hypertextbooks).

That is, the term “research” encompasses *all* of the inquiry-based activities of an active faculty member. In short, all UCI faculty members participate in some type of research and research-related scholarly and/or creative activities. And it is this set of activities that gives undergraduate education at a Research I university its uniqueness. Indeed, the Boyer Commission in *Reinventing Undergraduate Education: A Blueprint for America’s Research Universities* (1998) described the research university as a community of learners where the “shared goals of investigation and discovery” bind together students and faculty.

Like other research universities, UCI embraces the idea that undergraduate students should not only be exposed to the research process but should also be

participants in that process. Nearly a century ago, John Dewey noted that learning is based on discovery guided by mentoring, rather than on the mere transmission of information. Recent research in the neurosciences has confirmed that the most powerful learning occurs when the student is actively engaged in real-world tasks that demand higher-order thinking skills and abilities and that are undertaken in concert with other people (Marchese in *Assessing Impact: Evidence and Action* 1997). Many UCI faculty members have also turned inquiry, investigation, and discovery into the foundations of their success as teachers.

Not all undergraduate students are expected, or required, to participate in independent research projects at UCI. For some students, it will be enough to learn how research is conducted and to write research-based papers for composition courses. For all students, our aim is for them to stretch their minds, develop their critical thinking skills, and start synthesizing and begin applying what they have learned in various courses. One of the best ways to promote the development of such skills is to provide undergraduates with the opportunity to engage directly in a faculty-mentored research project or to engage in inquiry-based learning during a senior thesis or capstone course. That is, “opportunities” are emphasized rather than “requirements” that might not work for all students.

### **SIZE AND SCOPE OF UNDERGRADUATE RESEARCH ACTIVITIES**

For the purposes of this self-study, our assessment of undergraduate research and related inquiry-based activities began with data from the Office of the Registrar. To obtain an estimate of how many undergraduate students were engaged in research-related activities, the Registrar analyzed enrollments in courses numbered 195-199 (course numbers typically reserved for independent or group

research projects) for the graduating class of 1994-95. Results are presented in Table 1. For this group of students, just over half (51 percent) of those graduating with bachelors' degrees had enrolled in courses numbered 195-199; approximately one-third (34 percent) had enrolled in at least one independent study course (in the 199 series). The average number of units in 195-199 courses ranged from 6 to 13 units, depending on the academic unit (180 units required for graduation). It should be noted that the numbers presented in Table 1, while generally representative of the amount of undergraduate research at UCI, are actually underestimates. For example, these counts exclude students enrolled in research-related courses with course numbers other than 195-199 (such as Chemistry 180) and students engaged in non-credit internships or research assistantships.

**Table 1: Involvement in Undergraduate Research,  
1994-95 Graduating Class**

Academic Unit	Number Graduating	Course Numbers	Number and percent of Students Enrolled	Number of Units Taken	Mean Units Per Student
Arts	132	195-199	92 (70%)	1119.0	12.2
		199 only	67 (51%)	640.0	9.6
Biological Sciences	784	195-199	242 (31%)	1884.3	7.8
		199 only	197 (25%)	1639.3	8.3
Engineering	171	195-199	106 (62%)	764.0	7.2
		199 only	81 (47%)	453.0	5.6
Humanities	377	195-199	170 (45%)	1250.0	7.4
		199 only	107 (28%)	616.0	5.8
Information & Computer Science	95	195-199	43 (45%)	419.0	9.7
		199 only	24 (25%)	193.0	8.0
Interdisciplinary Studies	3	195-199	3 (100%)	18.0	6.0
		199 only	0 (0%)	0.0	0.0
Physical Sciences	121	195-199	24 (20%)	148.0	6.2
		199 only	14 (12%)	87.0	6.2
Social Ecology	459	195-199	450 (98%)	5877.7	13.1
		199 only	209 (46%)	2012.0	9.6
Social Sciences	837	195-199	397 (47%)	4015.0	10.1
		199 only	310 (37%)	2844.0	9.2
Total	2979	195-199	1527 (51%)	15495.0	10.1
		199 only	1009 (34%)	8484.3	8.4

Source: Registrar's Office, 5/7/96

To assess inquiry-based activities in regularly scheduled courses (excluding the ones listed in Table 1), we conducted a campuswide survey in which 12 representative departments participated. Each department was asked to complete a standardized spreadsheet querying the extent to which regularly scheduled courses between 1997 and 1999 provided opportunities for students to build their inquiry skills and their communication skills. The later half of the survey, on communication skills, was included for two reasons: first, research activities require that students be able to communicate their findings in an understandable fashion, and second, results could be used to inform the WASC self-study report on communications skills.

The instructions for completing the spreadsheet asked the faculty of each department to report on the number of courses with inquiry-based learning opportunities (such as problem sets, data analysis, group or individual labs or projects, and use of library research) and that emphasized communications skills (such as essay exams, papers and oral presentations). Summary results from the 12 departments are presented in Table 2:

**Table 2: Percentage of Undergraduate Courses Using Inquiry-Based Learning Strategies or Stressing Communication Skills, Selected Academic Units, 1997-99**

Academic Unit	# of Courses	Inquiry-Based Learning	Communication Skills
Arts			
Dance	46	41%	85%
Biological Sciences	151	88%	76%
Engineering			
Mechanical&Aerospace Engr	40	100%	58%
Humanities			
English & Comparative Literature.	148	100%	100%
History	141	64%	70%
ICS	53	94%	42%
Physical Sciences			
Chemistry	131	92%	43%
Social Ecology			
Criminology, Law & Society	60	47%	92%
Psychology & Social Behavior	117	21%	59%
Social Science			
Cognitive Science	169	41%	43%
Economics	53	96%	49%
Political Science	103	41%	100%
Total	1212	69%	68%

Source: WASC Self-Study Committee on Undergraduate Research, 2/00

Results presented in Table 2 indicate that, while various departments stress different types of learning opportunities, two-thirds of all the courses in the survey require at least one exercise that makes use of inquiry-based learning (69

percent of courses, or 63 percent of course-hours). Similarly, two-thirds of the courses surveyed require at least one exercise that emphasizes communication skills (68 percent of the courses, or 45 percent of course-hours). As might be expected, we find that inquiry-based learning is more common in the sciences and engineering, while writing or other communications-based learning is more common in the humanities and social sciences. Nevertheless, many science courses emphasize communication skills and, conversely, many courses in the humanities, arts and social sciences employ inquiry-based learning. These results indicate that faculty in all academic areas understand and reinforce the twin goals of communication skills and inquiry-based learning.

More detailed information from the survey is presented in Table 3. The table lists the percentage of courses in each department that included each of the various requirements regarding inquiry-based learning and communication skills. Please note that respondents were free to check more than one category for each course, as appropriate (i.e., a course may require a five-page paper, a group project, and library research). In the Web-based version of this table, detailed results by department may be viewed by clicking on the department name as it appears in the left-most column.

In completing the Table 3, each department was asked to list all lower-division and upper-division courses offered during 1997-98 and 1998-99. The table lists the number of courses in each department that included each of the various requirements regarding inquiry-based learning and communication skills. The total number of courses/sections considered by each department appears at the left side of the table. Respondents were free to check more than one category as appropriate (i.e., a course might require a five-page paper, group project, and

library research). “Oral Presentation” refers to a presentation of five minutes or more to the group and not just to class discussion.

**Table 3: Number of Undergraduate Courses Using Inquiry-Based Learning Strategies or Stressing Communications Skills, Selected Academic Units, 1997-99**

ACADEMIC UNIT	No. of Courses	INQUIRY BASED LEARNING				COMMUNICATION SKILLS				
		Problem Sets/ Data Analysis	Group Lab or Project	Individual Lab or Project	Library Research	3-5 Page Paper	2-5 Page Paper	5-10 Page Paper	> 10 Page Paper	> 5 min Oral Presentation
ARTS Dance	45	1	4	15	10	4	31	6	1	9
BIOLOGY	151	94	40	62	85	57	72	31	33	44
ENGINEERING Mech & Aero	40	36	13	24	15	2	7	5	9	11
HUMANITIES Engl & Comp Lit	148	1	39	146	26	82	93	82	38	50
History	141	6	3	2	36	10	46	44	23	24
I C S	53	31	15	31	7	4	10	7	8	11
PHYSICAL SCI Chemistry	131	86	24	88	49	0	48	26	23	23
SOCIAL ECOLOGY Crim Law&Soc	60	12	5	10	14	39	15	12	18	17
Psych&Soc Beh	117	4	6	18	8	7	20	20	25	12
SOCIAL SCIENCE Cognitive Sci	169	41	27	40	43	1	28	40	21	20
Economics	53	45	8	37	41	0	9	15	10	14
Political Sci	103	25	19	4	58	65	44	43	36	26
<b>Totals</b>	<b>1080</b>	<b>382</b>	<b>203</b>	<b>477</b>	<b>392</b>	<b>271</b>	<b>423</b>	<b>331</b>	<b>245</b>	<b>261</b>

### CAMPUSWIDE UNDERGRADUATE RESEARCH PROGRAMS

The interest of both faculty and students in undergraduate research and other inquiry-based projects has been considerably enhanced by the recent initiation of several campuswide programs that are open to all students. These programs include the following:

**Undergraduate Research Opportunities Program (UROP)** which provides advising on on-campus and off-campus research opportunities, provides funds through two calls for proposals (fall and spring) each academic year, and sponsors the [Undergraduate Research Symposium](#) and

the *UCI Undergraduate Research Journal* . (Additional details are provided below.)

**President's Undergraduate Fellowships (PUFs)** support meritorious undergraduate research projects with funds provided by the UC Office of the President. Formerly awarded by the Academic Senate Committee on Undergraduate Scholarships, Honors and Financial Aid, the PUFs are now administered by UROP.

**Pregraduate Mentorship Program (PGMP)** helps students of diverse backgrounds to pursue graduate studies primarily in the non-sciences. Selected students participate in workshops and other activities to prepare them for graduate school. (This program was discontinued as of fall 1999.)

**Committee on Instructional Development (CID)** funds are used by the campus to support faculty-mentored research projects. These awards are administered by UROP.

**NSF Scholars Program** recently funded by an NSF grant, will assist academically talented, low-income, third- and fourth-year undergraduates majoring in Information and Computer Science, Engineering, or Mathematics to complete their baccalaureate degrees and to make a successful transition from college to work or to graduate school. The two-year program will support 40 students per year with scholarships of \$2,500 each. Many of these students will be involved in faculty-mentored undergraduate research projects and corporate internships. This program is being coordinated by UROP.

**UCI Washington, D.C. Center Program** provides undergraduates the opportunity to do independent research under the guidance of a faculty member while studying in residence in the nation's capital. This year, 26

students were scheduled to participate in the first year of the program (9 in fall and 17 in spring).

**California Alliance for Minority Participation (CAMP)** is an NSF-funded Statewide initiative that aims to support and retain undergraduates to achieve their degrees in biological sciences, physical sciences, mathematics, or engineering. UCI's CAMP program, in coordination with UROP, encourages students to engage in internships and undergraduate research opportunities and has sponsored students to present their research results at the CAMP Statewide Undergraduate Research Symposium.

**McNair/STAR Scholars** work with faculty mentors to complete undergraduate research projects. This campuswide program, coordinated through CAMP, provides research and scholarly opportunities to prepare low-income, first-generation college students for graduate-level study.

Results from many of these undergraduate research projects have been presented as papers or posters at professional conferences and meetings. For example, at the March 2000 [UC Day in Sacramento](#) four UCI undergraduates—the largest number from any UC campus—were selected to present posters illustrating the research they are conducting, which ranged from the impact of domestic violence to non-invasive characterization of breast cancer. In the press release for this UC Alumni Association-sponsored event, UC faculty members were quoted as saying that “research benefits undergraduate education, rather than being in competition with it.” Professor Timothy Osborne, one of the UCI faculty members whose student participated in the conference, was also quoted as saying “They [the students] don't just get a research experience out of it. It's a real teaching tool.”

Other students have had their research results published. For example, several UCI engineering majors have published articles in the *California Engineer*, a student journal of the UC engineering colleges (based at UC Berkeley).

[UROP](#) is the most extensive of the campuswide programs that support undergraduate research and creative activities. Launched in 1995 as a unit within the Division of Undergraduate Education, UROP encourages and facilitates research and creative activities by undergraduates from all schools and academic disciplines at UCI. Research opportunities are available not only from every discipline, interdisciplinary program and school, but also from many outside agencies, including national laboratories, industry, and other universities. UROP offers assistance to students and faculty through all phases of the research activity: proposal writing, developing research plans, resource support, conducting the research and analyzing data, presenting results of the research at the annual spring UCI Undergraduate Research Symposium, and publishing findings in the *UCI Undergraduate Research Journal*. Projects supported by UROP must meet established academic standards and emphasize interaction between the student and faculty supervisor.

UROP is particularly noteworthy for being a comprehensive program that supports faculty-mentored undergraduate research at all stages of the research process. UROP nurtures students through the entire process, from the time a student first expresses an interest in participating in faculty-mentored research and in finding an appropriate faculty mentor, to the planning and funding of the research, to the time the student can disseminate the results.

UROP has met with great success in recent years and has received wide support from faculty including the active involvement of the [UROP Faculty Advisory](#)

[Board](#). The number of student projects funded by the program has nearly tripled since its inception in 1995. In 1999-00, for example, UROP awarded approximately \$91,000 in support of 175 student projects represented each of UCI's academic units.

The following table summarizes UROP data on the amount of funding provided, number of projects supported, and the number of faculty mentors by program since 1993, as applicable.

**Table 4: UCI Undergraduate Research Opportunities Program, Number of Projects Funded, Number of Faculty Mentors, and Total Funds Awarded by Program, 1993-1999**

Year	UROP			PUF			PGMP			CID			Total		
	A (*)	B	C	A	B	C	A	B	C	A	B	C	A	B	C
99-00	175	158	\$90,944	Combined with UROP			Discontinued Fall 1999			Combined with UROP			175	158	\$90,944
98-99	173	121	\$68,314				58	43	\$60,500				231	164	\$128,814
97-98	123	85	\$61,488				56	39	\$58,750				179	124	\$120,238
96-97	99	69	\$42,032	19	20	\$25,269	63	44	\$59,381	181	133	\$126,682			
95-96	51	37	\$24,709	22	23	\$22,000	68	47	\$63,000	55	38	\$25,218	196	145	\$134,927
94-95	Launched in 1995			19	20	\$22,491	62	46	\$70,956	73	51	\$24,835	154	117	\$118,282
93-94				21	19	\$30,347	Not Available			76	53	\$25,938	97	72	\$56,285

A = number of projects funded  
 B = number of faculty mentors  
 C = total funds awarded.

UROP offers two very effective means for disseminating the results of student projects:

- The *UCI Undergraduate Research Symposium*, organized as a professional conference with keynote speakers, oral and poster presentations, student performances, roundtable discussions, and an awards ceremony. The 1999 Symposium included more than 250 student presenters and performers from every discipline. The awards ceremony

included the Chancellor's Awards for Excellence in Undergraduate Research, awarded to both students and faculty.

- The *UCI Undergraduate Research Journal*, launched in 1999, a compilation of outstanding papers submitted by undergraduate students who have been involved in faculty-mentored research projects and creative activities. Copies of the journal were sent to more than 400 high schools and community colleges throughout California and to the UC Regents.

The successes of UROP, the Undergraduate Research Symposium, and the UCI Undergraduate Research Journal, are all tributes to UCI's commitment to undergraduate research. Additional information about UROP, including a copy of last year's UCI Undergraduate Research Journal, is available on the UCI accreditation website.

#### **ACADEMIC UNIT-BASED UNDERGRADUATE RESEARCH PROGRAMS**

In addition to the campuswide undergraduate research programs listed above, UCI also has numerous departmental and school-based programs that foster undergraduate research and other creative activities. Some of these programs are restricted to majors; some may be required for graduation in a given major. Selected examples follow, and more information is available in the UCI General [Catalogue](#). In addition to those listed below, all academic units offer their majors faculty-directed independent study and honors research opportunities, primarily through courses numbered 198 and 199.

#### [School of the Arts](#)

Each year more than 100 undergraduates from the [Dance](#) Department perform in the School of the Arts productions.

The [Music](#) Department provides performance opportunities for all UCI students, regardless of major. These are (1) choral and vocal opportunities such as Women's Chorus, Women's Chamber Choir and the Madrigal Dinner; (2) instrumental opportunities including the [UCI Symphony Orchestra](#), chamber music ensembles, Wind Ensemble, Jazz Big Band, and the UCI Band; and (3) music composition opportunities for composing works for performance or for reading by UCI's large performing ensembles.

### [School of Biological Sciences](#)

- [Excellence in Research Program](#): About 65 students participate each year in this program in which they develop extensive research projects, write papers, give talks, and present posters describing their research. Awards are given for the best presentations. "Excellence in Research" appears on transcripts.
- Undergraduate Biological Sciences Minority Advanced Research Training ([UBSMART](#)): Participants are given technical training in the labs to develop their research skills, plus training in data analysis, ethics, and scientific writing. They are placed in labs and when their research projects are completed, they are sent to conferences to present their data.
- Minority Biomedical Researchers Program ([MBRP](#)): Funded by the National Institutes of Health, undergraduate MBRP fellows conduct research while receiving an hourly compensation for two summers full-time, and two academic years part-time. Students are recruited in their sophomore year. After their initial training and orientation, students

conduct research in faculty laboratories in the School of Biological Sciences and the College of Medicine.

- Minority International Research Training ([MIRT](#)) program provides undergraduate and graduate biological and biomedical sciences students with international laboratory and field research experiences. Participants receive course credit, room and board, transportation, and a stipend. The UCI MIRT program has provided international research training to more than 70 minority science students on three continents under the supervision of world-known scientists. It is funded by the National Institutes of Health.
- [White Mountain Research Station Supercourse](#): Environmental Biology: Undergraduates devote an entire quarter's curriculum to this course, engaging in lectures and field training and research. About 15 students participate each year.
- NIMH Grant in Neurobiology Research: Research Experiences for Undergraduates: Under this new program, eight students per year participate in neurobiology research during the academic year and summers. They also receive training in experimental design, scientific writing, data analysis, ethics, and research seminars from experts
- in the field. They are sent to scientific meetings in addition to presenting their data to others on campus.
- Various NSF Grants: Research Experiences for Undergraduates

### [The Henry Samueli School of Engineering](#)

- NASA Undergraduate Scholars Awards for Research, coordinated through UROP

- Senior Design Projects for Mechanical Engineering majors (required). Projects have included cargo airplane design, the Baja Buggy, a Formula One race car, a human-powered vehicle, a portable fuel cell, devices for the disabled, and autonomous robots.
- Electrical Vehicle Project sponsored by the Electrical and Computer Engineering Department. Students design and develop an electric-powered vehicle.
- Mechanical and Aerospace Engineering 188: Design in Industry course, open to any UCI student, to work on industry-sponsored design projects.
- Environmental Engineering Field Studies
- Capstone courses in all disciplines, such as Chemical Engineering Design, Pollution Control, Design of Water and Waste Treatment Systems, and Structural Design of Buildings.
- Various NSF Grants: Research Experiences for Undergraduates

### **School of Humanities**

- **Humanities Core Course** (required of Humanities majors and open to all first-year students from any major) enrolls about a thousand students each year in a lecture/section format; sections limited to 22 students each. Students are required to complete a research paper in the spring quarter, based on a year-long series of assignments focused on methods of research in the humanities, including print, electronic, and Web-based sources. The research paper is the culmination of the curriculum in composition that is integrated into the course in all three quarters.

Research Seminar for History majors (required). Students are required to

analyze a historical problem through research in primary sources and writing an original research paper. Each seminar is offered following the History 190 Colloquium.

- Senior Essay for Concentration in Medieval Studies. Students may substitute a senior essay for one of four required upper-division courses.
- Senior Essay for Humanities majors (required). At the end of the senior year, Humanities majors prepare, under the supervision of a faculty advisor, a 40- to 50-page paper.

### **Department of Information and Computer Science**

- Project Classes – All ICS students are required to take a minimum of three upper-division project classes. Students who excel are encouraged to use these classes to engage in faculty-directed research projects. In particular, ICS offers project classes in areas such as artificial intelligence, design and analysis of algorithms, design of personal computers, operating system organization, social and organizational impacts of computing, software design and engineering, and software evolution.
- NSF Research Experiences for Undergraduates (REU) – Three undergraduate research projects are currently being sponsored by various NSF grants: (1) students design and develop a multimedia search engine for browsing and retrieving HTML documents based on their content, (2) students analyze, design, and implement a multicast video architecture for high-speed networks, and (3) students apply concepts from biology to create a new network serving architecture, called Bio-Networking.

### **School of Physical Sciences**

- Research Experiences for Undergraduates in **Physics**: This is a 10-week summer physics site program that has been in operation for 12 of the last 13 years, and funded for an additional 3 years. To date, 125 undergraduates have participated in the program—about one-third are UCI students and two-thirds are from other colleges and universities. Preference is given to applicants who are between their junior and senior years, who have not had previous REU experiences, and who come from schools with limited opportunities for undergraduate research.
- Chemistry 180: Undergraduate Research: The **Chemistry** Department sponsors a course in undergraduate research. Its enrollments are not captured in Table 1 (which focuses on course numbers 195-199). Chemistry reports that over 50 percent of its majors engage in undergraduate research either via Chemistry 180 or via research programs in neighboring disciplines (most frequently Biological Sciences).

### **School of Social Ecology**

- Naturalistic Field Research and Field Studies: Lecture course followed by studies in community settings. Students examine social-environmental problems as they occur in community settings, evaluate the merit of ideas presented in the classroom, and conduct naturalistic observations and investigations at field sites. Required of all Social Ecology majors.
- Research Seminar in Psychology and Social Behavior: Special topics research seminar and capstone research opportunity with ladder-rank faculty members.

### **School of Social Sciences**

- Summer Academic Enrichment Program (SAEP): Each year 18 to 20 students participate in an intense, five-week summer residential program designed to enhance their analytical and research skills and to prepare them for graduate school. It exposes students to analytical writing, statistics and numerous graduate school workshops.
- McNair/STAR: Within Social Sciences, there are over 20 McNair Scholars. These students are introduced to mentorship and are required to complete a faculty-mentored research project for the academic year. The school provides additional research workshops, mentorship, and guidance to the scholars to assure their success in the program.
- Public and Community Service is a specialization within the Social Science major in which students are required to integrate academic learning with community service activities. As a requirement, students enroll in a three-quarter class series and are placed in community internships with local community non-profit agencies. Students provide community service and conduct field research. In spring 2000, there were over 50 students in this program
- Field Studies Research/Internship Reception: Field Studies students present their research and internship experiences to an audience of faculty, students, and community visitors at the end of the academic year. The symposium allows students to learn about their peers' research and experiences at an authentic professional event. In spring 2000, 26 students participated in the program.
- Service Learning Research Internships: In support of Governor Davis' call to UC to make positive contributions to the underserved and marginalized communities of California through academic courses, the School of Social

Sciences provides out-of-class experiences to reinforce understanding of academic theory while addressing serious community concerns. With a structured curriculum having a research requirement, students explore the role of the social scientist in problem-solving activities affecting society.

- **Summer Scholar Research Program:** This program provides students avenues to explore quality summer research programs emphasizing “hands-on” research, faculty mentorships, and graduate school information. The intent is to offer undergraduates the opportunity to attend out-of-state higher education institutions to conduct research and supplement their educational experience. Approximately 10 students are participating during the 2000-01 academic year, and the goal is to have over 50 across the nation over the summer in the next three years.
- **Research Scholar Reception:** This end-of-the-year gathering, hosted by the dean, acknowledges all Social Science students conducting research funded outside the school. At this event, students come together to discuss their projects sponsored by McNair, UROP, Summer Research, and independent faculty.
- **Social Sciences Academic Resource Center Research Workshops:** The School of Social Sciences' Academic Resource Center ([ARC](#)) provides numerous research-related workshops throughout the academic year. These address the importance of research, ways to approach faculty and join their research teams, the benefits of research, and fundamental steps to conducting good research.

### **College of Medicine**

- **Pharmacology Summer Undergraduate Research Fellowship Program (1997):** With matching funds from the Society for Pharmacology and Experimental

Therapeutics, faculty members in Pharmacology created five \$2,000 summer stipends for five undergraduates to do 10 weeks of research in faculty laboratories.

### **CAMPUSWIDE HONORS PROGRAM**

One of the primary goals of the Campuswide Honors Program ([CHP](#)) a unit within the Division of Undergraduate Education, is to actively encourage honors students to engage in faculty-mentored research. From their freshman year onward, students who participate in CHP have the benefit of two educational worlds—they have the educational support and extensive faculty contact more typical of a small-college education, and the resources and facilities of a major research university where faculty members working on the cutting edge of research also teach undergraduate courses. Students selected for this program must have very strong academic records from either their high school or from a community college in the case of transfer students. The CHP is open to all qualified students, regardless of major. Commencing in 1988 with 100 students, as of fall 2000 the CHP has 155 new freshmen, in addition to its 575 or so continuing sophomores, juniors, and senior-year students.

CHP provides these outstanding UCI students with an honors curriculum including small, seminar-style classes, close interaction with peers, mentorship by UCI's top faculty, and the opportunity to participate in undergraduate research. Although a stress on inquiry-based learning is evident in all phases of the CHP curriculum, it is in the year-long senior capstone experience that students pursue original research under the supervision of faculty members, culminating in the production of a senior honors thesis, creative project, or paper of publishable quality. Their close association with faculty members has taught them how to

find interesting solutions to interesting questions. At the same time, close contact with a faculty mentor enhances the students' professional prospects by guiding their decisions about graduate and professional programs. Mentors also help students optimize the quality of their application materials so as to increase the students' chances of gaining admission to first-rate programs of their choice.

The success of CHP can be measured by the fact that approximately 90% of the students in it continue their studies after graduation from UCI at some of the most prestigious graduate and professional schools in the country. In addition, although CHP students comprise only about 3 percent of the UCI undergraduate student population, each year they make up at least 50 percent of the recipients of prestigious scholarship and fellowship awards. Similarly, a high proportion of CHP students receive Latin honors at graduation (awarded to the top 12 percent of UCI's baccalaureate recipients). Of the CHP's 96 June 2000 graduates, 69 percent received Latin honors (11 Summa Cum Laude, 25 Magna Cum Laude, and 30 Cum Laude). Overall, CHP students comprised 15 percent of those receiving Latin honors this year, including 31 percent of the Summa Cum Laude awards, 23 percent of the Magna Cum Laude awards, and 10 percent of the Cum Laude awards). These CHP graduates had a combined average GPA of 3.64 and an average of 237 course units completed (a minimum of 180 units is required for graduation).

#### **ACADEMIC UNIT-BASED HONORS PROGRAMS**

Several academic departments have honors programs for qualified juniors and seniors. The focal point of each of these programs is the development of analytical and research skills through the pursuit of research under faculty supervision. An honors-level thesis or senior essay is required in all the honors

programs listed below, except Drama (Acting, Directing, Music Theatre), which requires participation in UCI theatrical productions.

- **School of the Arts:** Honors in Acting, Honors in Directing, Honors in Music Theatre
- **School of Humanities:** Humanities Honors Program
- **Department of Information and Computer Science:** Honors Program in ICS
- **Interdisciplinary Studies:** Senior Seminar in Conflict Resolution (required); Senior Seminar in History and Philosophy of Science (required); Senior Seminar on Global Sustainability (required); Senior Seminar in Religious Studies (required)
- **School of Physical Sciences:** Honors Program in Chemistry; Honors Program in Physics
- **School of Social Ecology:** Honors Program in Social Ecology
- **School of Social Sciences:** Honors Program in Anthropology; Honors Program in Economics; Honors Program in International Studies; Honors Program in Linguistics; Honors Program in Political Science; Honors Program in Psychology; Honors Program in Social Science; and Honors Program in Sociology

#### **NEW INITIATIVES TO PROMOTE INQUIRY-BASED LEARNING**

During the 1990s, several UCI faculty development programs were initiated or enhanced to encourage the faculty to embrace new methods of teaching that emphasize inquiry-based learning. As noted in the 1998 Boyer Commission Report and elsewhere, many faculty members favor the lecture method as the

most efficient means of imparting knowledge. However, recent research in the neurosciences (as noted earlier) indicates that active learning and collaborative learning experiences can be very powerful teaching and learning tools (Marchese, 1997). That is, when the teaching and learning process changes from professor-centered to learner-centered, more powerful learning takes place.

### **The Instructional Resources Center**

The Instructional Resources Center ([IRC](#)), a unit within the Division of Undergraduate Education, has taken the lead in assisting faculty and graduate student teaching assistants (TAs) in shifting the methods of instruction from lecture-based to more student-centered strategies. One of the IRC's most important services is to provide free, confidential teaching consultations to faculty, lecturers and TAs. These consultations include mid-term student feedback and video consultation services with IRC staff members who are all experienced university-level instructors, as well as training specialists. To date, over 1,000 faculty and TAs have participated in the teaching consultation program.

Additional IRC services include departmental and school workshops on pedagogy and instructional technology for faculty and for TAs; the quarterly campuswide Teaching Colloquy for discussions and demonstrations on teaching; an on-line publication about teaching called [UCIdeas](#); and the TA Professional Development Program which is a department-specific training program for new TAs. The IRC also has established the innovative Teaching Assistant Consultants (TAC) Program, in which TACs receive extensive training in advanced pedagogy, conduct training of new TAs, and mentor other TAs in their school or department. The IRC also publishes the [TA Teaching Guide](#), a well-respected publication

requested around the country, containing short articles chock full of practical, concrete suggestions for effective teaching.

The IRC was formed in 1993 by the merger of two former offices—Instructional Development Services and Media Services. Both of these offices were originally created to provide services to faculty, one with ideas about pedagogy and one with ideas about technology. During the budget cuts of the early 1990s, a proposal was made to join the two units. The key component of that proposal was that technology stood to gain by an association with pedagogy and that pedagogy needed technology to help solve problems. As a result, IRC is now one of the campus leaders in discussions regarding the effective use of technology for the purposes of teaching and learning. During the past 10 years there has been an explosion in the use of technology for instructional purposes. UCI's Electronic Education Environment (EEE), a collaborative project of the [UCI Libraries](#), the Office of Network and Academic Computing Services (NACS), the Office of the [Registrar](#), and the [Division of Undergraduate Education](#), provides Web-based and e-mail-based course tools, electronic library services, and workshops. All UCI students receive e-mail accounts and access to the Internet and class information resources. All residence halls and dorm rooms have access to the campus network. Ninety percent of UCI's general assignment classrooms have active Internet connections. There are 10 technically enhanced classrooms (2,600 seats) and seven computer classrooms, and there are plans to convert five additional classrooms as funding permits. As of fall 1999, there were 1,080 seats available in open-access computer labs on campus. Although the topic of instructional technology could have been selected for self-study, the UCI WASC Self-Study Committee felt that the campus was already making significant progress in this area and that there were very few critical issues in instructional technology to discuss at the present time.

## **Hewlett PBL Faculty Institute**

The IRC is also providing leadership for a new program, funded by a two-year grant from the William and Flora Hewlett Foundation and other sources, that will promote a significant shift in teaching and learning by assisting faculty and TAs to become effective developers and users of pedagogies broadly described as “problem-based learning” (PBL) strategies. The two-year project includes two quarter-long Faculty PBL Institutes, on-going technical and professional support from experts in the field of PBL, campus Teaching Colloquies on the topic of PBL, plus faculty mini-grants and course release time for implementing PBL in their courses. The first Faculty PBL Institute was held in winter 2000; 10 faculty members and their TAs participated in the institute, which was led by professional staff from the IRC.

PBL is particularly appropriate for faculty members at a research university since they already participate in similar inquiry-based learning as they engage in their own research. In PBL, students actively engage in inquiry-based learning in order to solve open-ended, “real world” problems. Typically, students work together in teams on different aspects of the problem, and then share their findings with other members of the class orally or in writing. According to Barbara J. Duch of the University of Delaware, students using PBL “learn critical thinking and problem-solving skills which include the ability to find and use appropriate learning sources” (Duch, 1995).

The Hewlett PBL Project targets lower-division breadth (general education) courses. Although upper-division students frequently engage in inquiry-based education (as was exhibited in the preceding discussion of research opportunities),

lower-division students do so somewhat less often. Breadth courses, typically taken during the student's first two years, offer a unique opportunity to introduce elements of PBL that will serve as a foundation for further inquiry-based activities in upper-division courses.

## **The NSF Sciences, Mathematics, Engineering and Technology (SMET) Education Project**

In 1997 UCI received an NSF grant to support curricular reform in the sciences, mathematics, engineering and technology (SMET) education. The goals of the project were to support the development of new SMET courses, to infuse educational technology throughout the undergraduate curriculum, and to foster a change in the campus climate regarding curricular innovation and reform. The grant was led by the Dean of Undergraduate Education; the Associate Deans of Biological Sciences, Engineering, and Physical Sciences; the Chair of Information and Computer Science; other SMET faculty members; and staff from UCI Libraries and the Division of Undergraduate Education.

In the area of course development, the SMET grant supported the development of two new teacher education courses, a revised calculus course for undecided/undeclared students, revised courses and labs for introductory physics, and a [hypertext book](#) for the minor in [Global Sustainability](#). In the area of instructional technology, over \$80,000 has been awarded in the form of faculty mini-grants to support the development and use of technology in undergraduate education. Additional SMET projects include two [Faculty Summer Institutes](#) Faculty Summer Institutes for Instructional Technology, numerous faculty workshops on topics such as [“From Word to the Web,”](#) as well as technology workshops for entering students (how to use e-mail and electronic resources of the library), a SMET Website, and a quarterly [newsletter](#) on SMET education at UCI (with a circulation of 2,000 copies per issue).

During the first year of the project, the members of the SMET Advisory Board expressed interest in learning more about new teaching and learning strategies, especially problem-based learning (PBL). As a result of their interest, the Division of Undergraduate Education and other campus units began to develop ideas and programs related to PBL, which resulted in the development and subsequent award of the above-referenced Hewlett grant.

### **Faculty Mini-Grants**

Each year the Division of Undergraduate Education holds two competitions for faculty mini-grants (maximum award is \$5,000). The first of these mini-grants programs, the [Instructional Improvement Initiative](#), supports general curricular development activities related to selected themes or topics chosen by the Dean of Undergraduate Education each year; for example, the 2000-01 themes were “Improving Students’ Communication Skills” and “Introducing Significant New Elements of Inquiry-based Learning into a Course.” The second mini-grant program supports the development of new technologies for teaching and learning. Faculty members submit a narrative and budget proposal which is reviewed by a panel of faculty and staff.

Since 1997 the Division of Undergraduate Education has awarded 62 faculty mini-grants totaling just over \$190,000. Examples of funded projects include [“Inquiry-Based Computer-Interactive Homework and Student Achievement in General Chemistry,”](#) “Supporting ESL Writers Through Computer-Assisted Language Learning,” “Summer Bridge Computer Literacy Course,” and “The English County, 1500-1800: An Interactive Experience.” Additional faculty [mini-grants](#) have also been awarded through the Hewlett PBL Faculty Institute and the NSF SMET Project.

## USE OF SMALL CLASSES TO PROMOTE INQUIRY-BASED LEARNING

At a large university such as UCI, large classes are an efficient and effective method of teaching large groups of students. National research on different instructional approaches has consistently shown that lecture courses can be an effective method for the transmission of information. However, when the goal is higher-order cognitive skills such as inquiry-based learning, critical thinking, and problem solving, classroom discussions are the more effective approach (Pascarella & Terenzini, 1991).

Since classroom discussions are much more manageable in smaller-sized classes, UCI also offers many small, seminar-type courses. Some of these are stand-alone courses, such as [Freshman Seminars](#) or special discussion sections attached to larger lecture courses. Small undergraduate classes also promote interaction between students and faculty members where they can engage in meaningful dialogue and exploration and where students can learn first-hand about the research process and the new knowledge and insights that result from it.

Table 5 shows the number of fall 1999 undergraduate course sections and subsections by class size. Sections include primary course sections such as lectures and seminars; subsections include secondary course sections such as labs, discussion sections, and quiz sections. Independent study courses are not included in the statistics. According to these data, 66 percent of the primary course sections and 70 percent of the subsections had enrollments of less than 30 students in fall 1999.

### **Table 5: UCI Undergraduate Course Sections and Subsections**

**by Class Size, Fall 1999**

Class Size	Sections		Subsections	
	N	%	N	%
Under 10	255	(21%)	136	(11%)
10 to 19	246	(20%)	337	(27%)
20 to 29	307	(25%)	388	(32%)
30 to 39	70	(6%)	150	(12%)
40 to 49	47	(4%)	84	(7%)
50 to 59	131	(11%)	142	(11%)
100+	152	(13%)	8	(<1%)
<b>Total</b>	<b>1,208</b>	<b>(100%)</b>	<b>1,245</b>	<b>(100%)</b>

Source: Office of Analytical Studies, NAIMS Master  
Class File, F99, JCS, 05/04/00

Small courses are prevalent at both the upper-division and lower-division levels. For example, most of UCI's upper-division classes for undergraduate majors are small. Even at the lower-division UCI has small classes taught by ladder-rank faculty. A recent study by the Division of Undergraduate Education identified 59 lower-division courses taught in 1998-99 by ladder-rank faculty with total enrollments less than 25 students, excluding Studio Art courses taught by ladder-rank faculty (Source: Z. Soltani, Division of Undergraduate Education, 12/17/99). A total of 1,069 students were enrolled in these courses and about two-thirds of those students were freshmen and sophomores. The School of Humanities offered the largest number of such courses (18 out of 59). Students in the large [Humanities Core Course](#) also meet three hours per week in sections of twenty-two or fewer students, and part of that class-time is devoted to discussions of the research exercises described above, including the critique of scholarly sources identified by the students and, in spring quarter, strategies for integrating that research into the research paper required of every student in the course.

All UCI faculty members outside the College of Medicine and the Graduate School of Management teach undergraduate courses. When the number of undergraduates are compared to the total number of ladder-rank faculty, the ratio is 18 to 1 (Office of Analytical Studies and Information Management, fall 1999). This ratio compares very favorably to other research universities.

UCI's Freshman Seminars Program was started in 1996 to provide new freshmen the opportunity of studying with senior professors who are distinguished for their research as well as for their commitment to teaching. Since 1996, approximately 30 freshman seminars have been offered on a variety of topics from "Disease and Civilization" to "The Salem Witch Trials," some taught by distinguished senior faculty. Enrollment is limited to 15 students, and priority is normally given to freshmen not enrolled in other seminars or in courses with similarly small enrollments.

The School of the Arts also supports the use of small classes. For example, each Studio Art course is typically capped at 20 students. In addition, in 1999-00, the school added a third section of Ballet III, because those classes were becoming too crowded for teachers to be able to offer personal correction and feedback to their students. Now, with three sections of Ballet III, freshmen, in particular, get an improved and more personalized education in ballet techniques (which forms the foundation of their dance training), and their teachers are better able to track their progress.

The School of Social Ecology's year-long [Mentor/Mentee Program](#) is designed to work with new freshmen and transfer students in small groups by providing them with a faculty and student mentor.

Although UCI depends on large classes in many academic areas, especially in introductory survey courses, many departments have tried to create small classroom environments using discussion or lab sections. These sections, with enrollments of 30 or fewer students, are intended to create more interaction among students and between students and instructors. In most cases, these sections are conducted by graduate students (TAs); however, in some large courses such as the Humanities Core Course, sections for honors students are conducted by ladder-rank faculty. While in many cases, these supplemental sections are intended to review and reinforce materials from course lectures, at least in some courses, sections engage in inquiry-based study of cases related to the course topics.

For example, in 1996-97, the School of Biological Sciences added discussion sections to its core courses (Bio Sci 97, 98, and 99). One of the primary purposes of these discussion sections was to provide students with a small-group experience where they could easily ask questions, practice the use of the specialized vocabulary of the courses, apply course concepts, and have interactions with the discussion leaders who also held Ph.D. degrees in the biological sciences. In 1997-98 the Program in Film Studies, in the School of Humanities, developed a new sophomore-level core course ([Film Studies 85A-B-C](#)) which was designed with discussion sections, as well as the lecture and studio for film screening, in order to offer the advantages of a seminar with a course TA.

Peer-tutoring programs and adjunct classes offered through UCI's Learning and Academic Resource Center ([LARC](#)) also offer the opportunity for small-class environments within larger courses. Peer-tutoring sessions consist of small group sessions with an undergraduate peer tutor, meeting for 50 minutes, twice a week, and are offered in conjunction with most of the campus's large introductory

courses. These groups are intended to get students actively involved in their own learning through discussion, practice examinations, and inquiry-based study of major issues raised in the courses. Adjunct classes, with enrollments of 20 to 25 students, are conducted by professional LARC staff with advanced degrees and experience in specific disciplines. Adjunct classes focus on the development of study strategies such as note-taking, exam-preparation, reading and writing, in ways connected with the specific content of specific lecture courses.

In addition, UCI's [Summer Session](#) can provide a small-class alternative to many of the larger survey courses. Most survey courses, when offered in the summer, have enrollments one-quarter the size of those offered during the academic year. For some courses, the proportion may be nearer 10 percent, creating possibilities for student interaction and discussion far greater than those present during the academic year. Currently, all campuses in the University of California system are considering ways to expand summer sessions.

## **RECOGNIZING EXCELLENCE IN TEACHING**

To further encourage a climate that rewards faculty for teaching and mentoring undergraduates, the campus has recently increased the visibility, size and scope of teaching awards, at both the campuswide and school-based levels.

In 1994, UCI held its inaugural *Celebration of Teaching* event to recognize excellence in teaching. It is co-sponsored by the Academic Senate [Committee on Teaching](#), the Division of [Undergraduate Education](#), and the [Instructional Resources Center](#), with additional funding provided by the [Office of Graduate Studies](#) and [Network and Academic Computing Services](#). In spring 2000, the following teaching awards were presented:

**Excellence in Teaching Awards** – one faculty member and one teaching assistant from each academic unit was recognized for excellence and innovation in teaching. Awardees are selected by the respective deans. Two of the teaching assistants who receive this award are also selected by the Committee on Teaching to receive a dissertation fellowship and fee waiver for one quarter. These Outstanding TA Fellowships are sponsored by the Office of Graduate Studies.

**Teacher Innovator of the Year** (\$500 award) – one faculty member was recognized for his outstanding contributions to teaching. Nominations are made by each school and the awardee is selected by the Committee on Teaching.

**Departmental Teaching Award** (\$2,500) – begun in 1999, this award recognized the contributions of an entire department for its collective efforts to enhance the environment of teaching and learning.

**Course Website of the Year Award** (a dedicated computer modem) – the Committee on Teaching selected one faculty member whose UCI course Website exemplifies excellence in both teaching and learning. Network and Academic Computing Services provides a year's dedicated computer modem to the winner.

**TA Developer of the Year** (\$500) -- this award goes to a Senate or non-Senate faculty member for outstanding TA mentoring in teaching.

Each year UCI's Academic Senate honors faculty members for their excellence in research, teaching and service. In the area of teaching, two awards are given each year: Distinguished Faculty Lectureship Award for Teaching (started in 1988) and the Distinguished Assistant Professor Award for Teaching (started in 1994).

Recipients present invited lectures to the campus community and are featured annually in the *UCI General Catalogue*.

The UCI student body also presents annual awards for excellence in teaching. Each year the Senior Class makes teaching awards for outstanding faculty from each school. The Order of Omega, sponsored by Panhellenic and the Interfraternity Council, similarly presents awards for outstanding teaching.

Many of UCI's schools and departments also recognize excellence in teaching. Unless otherwise noted, all of the following awards are made annually. Multiple awards are noted in parentheses.

#### **School of Biological Sciences**

- Excellence in Teaching Award (2 faculty awards)
- Steinhaus Award for Excellence in Teaching by a Graduate Student (4 TA awards)

#### **The Henry Samueli School of Engineering**

- Outstanding Faculty Teaching Award
- Teacher of the Year Award (selected by the Engineering Student Council)

#### **School of Humanities**

- Humanities Associates Faculty Teaching Award
- Humanities Associates Outstanding Graduate Student Teaching Award (3-4 TA awards)
- Outstanding Teaching Assistant Award (1-2 TA awards per department)

#### **Department of Information and Computer Science**

- Golden Floppy Award (selected by ICS majors)
- Outstanding Professor in ICS (selected by graduating ICS majors)
- Teaching Innovation Award (selected by the Chair)

#### **School of Physical Sciences**

- Outstanding Contributions to Undergraduate Education (4 faculty awards)
- Outstanding Teaching Assistants (3-4 TA awards)
- Chemistry: Outstanding Teaching Assistant
- Mathematics: The Connelly Award to the Outstanding Teaching Assistant

#### **School of Social Ecology**

- Outstanding Teaching Assistants (15-25 TA awards)
- Outstanding 194W Field Research Teaching Assistants (3 TA awards)

#### **School of Social Sciences**

- Outstanding Graduate Teaching Assistant
- Sociology: Teaching Assistant Awards (2 TA awards)

In addition to awards for excellence in teaching, UCI also rewards excellence in mentoring undergraduate research. Each year, one faculty and one student from each academic receive the Chancellor's Awards for Excellence in Undergraduate Research. These awards are presented at the annual UROP Undergraduate Research Symposium.

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## CHAPTER FOUR: IMPROVING COMMUNICATION SKILLS AT UCI

In spite of an extensive breadth (general education) requirement in writing at UCI, one that includes two quarters of lower-division work and one of upper-division work (a unique feature of the writing requirements among the University of California's several campuses),<sup>1</sup> there is a widespread feeling that too many of our students graduate without strong skills in writing. There is a comparable feeling too that the *oral* communication skills of many of our students are not what they should be.

There are plenty of data that suggest the particular challenges to developing our students' communication skills at UCI: among UCs we are at the very bottom in terms of the absolute numbers of freshman who enter without having satisfied the Subject A requirement in English Composition. The mean SAT Verbal scores of our undergraduates are typically the second-lowest among all UC campuses. We are usually second from the bottom in terms of the *percentage* of students who have satisfied Subject A (only about half of our freshmen enter having satisfied Subject A). Moreover, as of fall 1999, approximately 59 percent of entering students did not have English as their first language, and about 13 percent were identified as having sufficient ESL difficulties that they were required to take course work in ESL before tackling Subject A. There are also numbers of students who have no first language in which they feel confident (about half of ESL-identified students report difficulty with reading and writing their first languages).

Over the past few years, extensive external reviews of the writing breadth requirements at UCI have been conducted under the auspices of the Academic Senate's Council on Educational Policy (CEP), which among many other charges has responsibility for regular reviews of all academic programs.<sup>2</sup> Based upon the findings of the external reviewers and responses from various academic units, we have identified three main areas of inquiry for the purposes of this self-study.

- Does the campus have a clear idea of what the communication skills of our graduating students ought to be and what would be the appropriate means to assess them?
- To the extent that we believe (or find) that our graduating students' skills are deficient, what would be the appropriate next steps for the campus to take to improve them?
- Given the constraints of a large, ambitious research university, how can we create a campus culture that fosters our students' communication skills—spoken as well as written—at every level (graduate as well as undergraduate)?

#### **DEFINING AND ASSESSING COMMUNICATION SKILLS OF UCI'S GRADUATES**

The *UCI General Catalogue* affirms the importance of writing: “Because of the importance of writing in every academic discipline, the University is committed to developing the writing skills of its students at all levels and in all areas. The Writing Requirement expresses this commitment, but the concern for and

attention to clear, accurate writing is expected in all courses.” Regrettably, and in spite of the recently completed reviews of the implementation of upper- and lower-division writing breadth requirements at UCI, there is actually no clear consensus as to what constitutes *good* writing. Indeed, the discussions that took place during and after the reviews of writing initially proved divisive.

Among the recommendations made by the reviewers of upper-division writing (the first of the two writing reviews to be conducted) was the following: “To ensure more than anecdotal and fragmentary data about student writing ability and writing improvement, UCI should institute a carefully researched writing assessment plan for the university as a whole.”<sup>3</sup> CEP took up this lead with a strong recommendation of its own in its response addressed to the Executive Vice Chancellor for the “development of systematic means of assessing the writing ability of UCI’s students and to track its improvement through their UCI experience.” And their recommendation in turn has led to a long series of discussions that have culminated in a proposal, endorsed by CEP, to explore a “Gateway” writing examination administered to students at the end of their lower-division writing course work, the passing of which would be a prerequisite to their completing their upper-division requirement in writing.<sup>4</sup>

It was in the course of the conversations that led to this proposal that the extent of the divisions that surround writing became evident, and even though implementation of the Gateway Exam now seems a remote possibility, the controversy it generated provides an instructive case history of the kinds of anxieties that attention to writing and especially the assessment of writing gives rise to.

Of course writing has, since the days that people began to be self-conscious about the *quality* of communication, long been a topic that attracts controversy. Very few people who are not professional mathematicians or scientists worry about the elegance of a formula or a computation, but we are all quick to be charmed or offended at the way people express themselves in writing and in speech. Many of us would nevertheless have hoped that at a large research university there would be general agreement that so-called “Standard English” is the rightful norm when it comes to our communications.

Most people at UCI believe that the chief reason for a writing requirement is to develop skill in “clear, accurate writing” (to quote the *Catalogue* again), and they generally understand Standard English to be the appropriate vehicle for such writing. Others note that “Standard” English is itself merely one dialect among many, inherently no better suited to clarity and accuracy than any other dialect, and that attention to its (arbitrary) conventions distracts from the more important features of good communication—cogent, logical, and persuasive *thought*. Opinions vary widely, even among the communications experts. Some people believe, for example, that students with ESL difficulties ought never to be penalized for “errors” unless these absolutely prevent a reader or listener from understanding the thought expressed. A few local experts believe that native speakers especially ought not to be penalized for errors.<sup>5</sup> And these people often believe too even that it is harmful to point such errors out. Others believe that “corrective feedback” is essential to meeting the needs of ESL students and native speakers and that “correction” is indeed what students themselves generally prefer.

To simplify a bit, we might say that the greatest of the divides at UCI regarding the central role of “writing courses” separates those on the one hand for whom correctness counts most and on the other those for whom the teaching of writing is really the teaching of critical thinking.

The range of opinion about good writing became apparent only as the campus tried to develop an appropriate means of assessing the communication skills of our undergraduates, especially at the midpoint of fulfilling their writing requirements, and especially as the Gateway Exam began to be imagined as an obstacle to students beginning their upper-division writing course work. Undoubtedly we were naïve to think that an assessment plan of any sort could be instituted smoothly, but we did not anticipate that a topic that has proven extremely divisive relative to K-12 education would prove no less so at UCI.

The reasons for this, however, are not particularly obscure. Indeed, they include several of the same reasons that the assessment of public K-12 education has been controversial. There is fear among the teachers of writing that assessment of students’ communication skills amounts to a direct evaluation of the teacher’s own competence. There is fear among students who believe that their communication skills are for one reason or another not up to whatever standard might be agreed upon and that they will be unfairly held back. There is fear among administrators that, as costly as the assessment plan itself might be (and many fear it would prove quite expensive), the cost of holding some students back for additional instruction will be prohibitively expensive.

But perhaps the greatest obstacle to the Gateway Exam was resistance on the part both of the panel of external reviewers who looked into the lower-division writing requirement (the second of the two consecutive reviews) and some of our local experts in the assessment of writing.

The external reviewers expressed “grave doubts” about the proposed exam, even though it was developed in response to recommendations of the first set of reviewers (and in spite of the fact that there was one member who overlapped both reviews). While recognizing its worthwhile goals, reviewers expressed the fear “that such a test, given the economics of preparing, administering, and scoring it and given the relatively unsophisticated attitudes about writing that prevail in some areas on campus, will revert to a test of students’ mastery of basic conventions.” (Of course, this is at the core of what some faculty would be happy to have, along with the ability to write with clarity and cogency.) Alternatively, reviewers were skeptical that such a test would succeed even at that narrow objective. “As experienced professionals familiar with writing programs across the country,” they wrote, “we challenge the Writing Board and campus leaders to find institutions ... that successfully use such a test before it [sic] implements one at UCI. We believe that experience has led campuses to avoid such well-meaning efforts because their disadvantages far exceed advantages.”

Our local experts in the assessment of writing echoed both concerns and argued further that to do assessment well would involve a much more elaborate (and expensive) instrument than was imagined for the Gateway Exam. They pointed out that no matter how hard one tries to create an objective examination, such assessments inherently have political dimensions, and therefore they share the

reviewers' worries that such an exam will effectively discriminate against ESL students.

The combined resistance to the Gateway Exam from reviewers, some local experts in communications, and administrators concerned about its costliness, have, as we have noted, effectively put the proposal on a back burner. But the discussions that have surrounded it have not only been instructive in themselves, but have led in turn to some other interesting possibilities, discussed below.

### **IMPROVING STUDENTS' COMMUNICATION SKILLS**

As already noted, even the successful implementation of the Gateway Exam would at best tell us only about the skills of our undergraduates in the middle of their careers; it would still leave us guessing as to the skills of our *graduating* students and so would tell us only half the story of how much students' writing improves while they are at UCI.<sup>6</sup>

Partially to meet this objection and partially because it seems less likely to encounter the kinds of objections that the Gateway Exam has encountered, the idea of an upper-division Communications Portfolio has begun to be explored by many of the same people involved in the design of the more controversial Gateway Exam. The portfolio would be designed to ensure that every student at the upper division would complete a certain amount of writing and speaking of *several* kinds—not just timed in-class writing or term papers, that is, but reports, presentation of research, collaborative and peer-edited assignments, formal oral presentations, and the like. The particular configuration of the portfolio and the types of communication required could be determined by the individual academic

units, so that students' portfolios would be appropriate to their majors. The portfolio would not necessarily involve any additional course work, but completion of course work within upper-division writing courses and some courses in the major would be geared to completing various components of the requirement. Individual faculty would check off items on each student's portfolio list of required kinds of work as appropriate and as they are successfully completed. One benefit of this plan would be to heighten the faculty's consciousness of the importance of writing outside the formal breadth requirement; it would help to enhance the "culture" of writing as discussed later. The portfolio would not be restricted to writing, moreover, but would likely include not only oral presentations, but other kinds of communication, such as the creation of Web pages or multimedia.

But while we are more optimistic about the prospects for some version of an upper-division Communications Portfolio than for the Gateway Exam, it seems clear too that the discussion about writing surrounding the recently completed reviews has exposed significant disagreements. The desirability of more discussion about even very fundamental issues regarding writing has been recognized. One plan that the campus intended to implement in 1998-99 was to hold a campuswide "Writing Forum" to be jointly sponsored by the School of Humanities, the Division of Undergraduate Education and possibly the Writing Board.<sup>7</sup> This would have been a one- or two-day conference on Writing that would have brought together various instructors of writing, administrators of the several writing courses that fulfill the breadth requirement, academic support staff, ESL teachers, Teaching Assistants, and several faculty in English and Comparative Literature whose research careers involve Rhetoric and Composition—as well, it was hoped, as people less professionally close to the

teaching of writing who nevertheless are concerned about the issue.<sup>8</sup> Planning was barely under way when a work stoppage by Teaching Assistants deflected attention from the project.

In response to the external reviews, the Executive Vice Chancellor charged the Dean of Undergraduate Education to begin discussions to culminate in recommendations about additional resources that might be assigned to improving instruction in Writing. Then-Interim Dean Meredith Lee (now the current dean) in fall 1999 convened a Writing Workgroup consisting of the Chair of the Council on Educational Policy, associate deans from the sciences and humanities, the Assistant Dean of Humanities, the Chair of English and Comparative Literature and the Director of Academic Budget. This group has met regularly and has received updates from various units with particular involvement in the teaching of Writing: the Humanities Core Course,<sup>9</sup> Writing 39A-B-C,<sup>10</sup> English as a Second Language,<sup>11</sup> and the Learning and Academic Resources Center (LARC).<sup>12</sup> In the meantime, the Department of English and Comparative Literature had appointed an ad hoc committee to develop recommendations in response to the recommendations of the external reviews, and this document was forwarded to the Writing Workgroup. The Workgroup recommended to the Executive Vice Chancellor the creation of a new senior position (Campus Writing Coordinator) with both faculty and administrative duties and a degree of campuswide authority not enjoyed by the current Director of Composition, who holds a full-time appointment within English and Comparative Literature.<sup>13</sup>

Because under UC's policy of shared governance it is the Academic Senate that has sole authority over curriculum and degree requirements, and because UCI is divided into 11 relatively autonomous academic units, it can be extremely

difficult to coordinate the substantial amount of teaching in composition undertaken within English and Comparative Literature (about half our students go through the Writing 39A-B-C sequence) with writing as taught in the Humanities Core Course (taken by about one-quarter of our students—the remaining one-quarter fulfilling lower-division writing at community colleges [in the case of transfer students] or through successful Advanced Placement results), the many upper-division writing courses offered in the various academic units, ESL (housed in Humanities but independent of the Composition Program), and academic support services (chiefly administered by the Division of Undergraduate Education). Although the Writing Board is the body most clearly authorized to oversee instruction in writing at UCI, it has, in the view of both external review committees, functioned neither very effectively nor visibly. And, as a purely practical matter, it is such administrators and faculty as the Director of the Humanities Core Course, the Director of Composition, the Director of ESL, the Chair of English and Comparative Literature, the Chairs of the Council on Educational Policy and the Writing Board who have to be in agreement if there is to be effective coordination among all the various components of that instruction. But while many of them have met occasionally in groups of two or three, they have never come together at one time and place.<sup>14</sup>

#### **CREATING A CAMPUS CULTURE TO FOSTER COMMUNICATION**

It is a complaint often expressed by those charged with the teaching of writing that the very existence of an extensive writing requirement tends to make faculty in other courses feel it is perfectly fine for them not to *teach* writing nor even to *require* much if any writing, much less oral presentations.<sup>15</sup> This problem is of course exacerbated at large public research universities whose student-faculty

ratios mark one of the most dramatic differences between their undergraduate programs and those at private universities and liberal arts colleges. It is exacerbated too by the kinds of statistics cited at the beginning of this discussion. The teaching of writing is, under the best of circumstances, a difficult and extremely labor-intensive activity. But students whose Verbal SAT scores are relatively low, students for whom English is not their first language, students from linguistically impoverished environments and who may be said in effect to have *no* “first” language<sup>16</sup>—all these groups are especially challenging to teach. It would be unreasonable to expect that even a more substantial allocation of resources than the one or two FTE likely to emerge from recent campus reviews and discussions will have a very noticeable impact on the quality of UCI students’ writing in the short run (“be realistic about what can be accomplished in formal course work in writing, given UCI’s student population,” the reviewers of lower-division writing advise<sup>17</sup>). Therefore fostering a *culture* of good writing and speaking throughout UCI—at both the undergraduate and graduate levels—ought to be a high priority for the campus, while we nevertheless recognize that its realization will likely prove elusive.

The influential 1998 report of the Boyer Commission on *Educating Undergraduates in the Research University* has at the heart of its “Ten Ways to Change Undergraduate Education” a recommendation to “Link Communication Skills and Course Work.” As the authors note, “Undergraduate Education must enable students to acquire strong communication skills, and thereby create graduates who are proficient in both written and oral communication.”<sup>18</sup> The Commission further recommends that communication skills should be integrated into every course and that they “must be similarly emphasized in the education of graduate students” (p. 25). UCI heartily endorses these recommendations and

believes that implementing them would, beyond the immediately practical benefit of making better communicators of all our students, also have the secondary benefit of increasing contact between students and a faculty whose attention is by design divided between teaching and research. The key challenge is, of course, how to create and sustain such a writing culture.

As one step, in 1999 the campus was awarded a grant by the William and Flora Hewlett Foundation to incorporate problem-based learning (PBL) into the general education (breadth) curriculum at UCI. The proposal's stated goals for UCI students are:

- To obtain a deeper understanding of course concepts and connections between academic disciplines
- To develop and practice life-long learning skills such as the identification and use of learning resources and cooperative learning
- To improve their *communication* skills [emphasis added]
- To promote positive attitudes towards general education courses and their subject matter

While our proposal to institute a faculty institute in PBL (the first of these commenced winter 2000) has initially focused on improving the pedagogical skills of tenure-track faculty who teach lower-division breadth courses and on introducing what we believe will be a set of useful and engaging pedagogical approaches into these courses, we expect these innovations will not only help shift emphasis in the general education classroom from the teacher-based transfer of knowledge to a student-based process of discovery more analogous to the process

of research with which faculty are so comfortable, but also have a substantial benefit for students' communications skills. Not only is there explicit attention to communication in the training that faculty and TAs undergo in the PBL institutes, but problem-based learning by its very nature calls for interactions between faculty and student and student and student that are communication-rich.

Another idea that has been circulated is the development of a Speech Center, possibly within the Learning and Academic Resources Center (LARC), which offers many of the academic support services on campus, typically through peer tutoring and through workshops and one-on-one sessions with professional counselors trained in a variety of disciplines (writing, ESL, chemistry, biology, math). Among the LARC director's budget requests for 1999-2000 was an FTE for an oral communications counselor, who would be available both to undergraduates and graduate students. (This position has been funded but not yet filled; LARC has begun limited offerings in oral communications this year.) The inability to make clear as well as cogent oral presentations can seriously hamper otherwise very competent students when they go out into the workplace. Problems in speaking are not uncommon among our graduate students, many of whom are not native speakers of English, and these problems can have wide impact when graduate students who are poor speakers become TAs.<sup>19</sup> The Instructional Resources Center (also administered by Undergraduate Education) offers training to TAs (and indeed to all instructors), and this includes help with speech and other aspects of classroom "performance," but the Instructional Resources Center does not have the capacity to deal with the special needs of non-native instructors. The ESL Program has in its curriculum a speaking course designed primarily for international TAs. The Dean of Undergraduate Education has asked ESL to assure its availability for 2000-01.

We might note in this connection that there is evidence of growing interest in “speaking across the curriculum” as a desirable parallel to the long-standing concern with “writing across the curriculum” (see, for example, Allison Schneider’s article “Taking Aim at Student Incoherence” in *The Chronicle of Higher Education*, March 26, 1999, section The Faculty, p. A16). Thus far, the movement is most apparent at smaller liberal arts colleges (Mount Holyoke, Smith), though speech centers have recently opened at larger public universities as well (the University of Utah and North Carolina State).

Every spring another program in the Division of Undergraduate Education, the Undergraduate Research Opportunities Program (UROP), mounts a day-long Undergraduate Research Symposium at which undergraduates from each academic unit present the fruits of their labors (in 1999, the work of 231 undergraduates was featured and 152 faculty mentors participated). This highly successful program offers, among other venues for the presentation of research (such as poster presentations), panels at which students make oral presentations. The day is capped by an awards ceremony. Up to now, these awards have been very largely content-based, but we are exploring the idea of making some additional awards based upon excellence in presentation, whether written, oral, or in other media.

The 1999 and 2000 call for proposals issued from the Dean of Undergraduate Education for instructional improvement funds targeted oral and written communication skills and applications of problem-based learning.

## CONCLUSION: A SIGN OF HOPE

These are, in conclusion, examples of the kinds of activities that, when broadly implemented, can stimulate and deepen the “culture of communication” at UCI. We are eager to find better ways to fulfill the *Catalogue*’s exhortation that “the concern for and attention to clear, accurate writing is expected in all courses.” And we are eager too to include speech among the communications skills we think are vital for our students to be comfortable with. But as the authors of the Boyer Commission report and countless others have noted for many years, at ambitious research universities the forces driving faculty and graduate students tend to make teaching secondary to research, and at *public* research universities the valuing of research over teaching is even more apparent, because the public subsidy of the costs of undergraduate education, generous though it often is, simply cannot match the kinds of resources that tuition generates at private colleges and universities. The difficulties are compounded when well over half the student population do not have English as their first language.

One obvious area of reform involves the policies and criteria pertaining to faculty advancement. “Change Faculty Reward Systems,” urges the Boyer Commission: “Research universities must commit themselves to the highest standards in teaching as well as research and create faculty reward structures that validate that commitment” (Recommendation IX, p. 31). A report just released under the auspices of the American Association of State Colleges and Universities under the chairmanship of Charles B. Reed, Chancellor of the California State University system, argues that while there has been a significant increase in the attention to teaching in promoting professors, “the trend toward increasing the value of teaching and service in tenure decisions has not progressed far enough.”<sup>20</sup>

Because of the highly labor-intensive nature of instruction in writing, it is likely that a faculty reward structure more favorable to teaching would lead to significant enhancements in the area of writing. We believe that many faculty are genuinely concerned about their students' writing and would like to pay far more attention to it, but simply cannot, given the very large numbers of students who need help and the demands being made upon the faculty's time not just in research, but in administrative and other service tasks as well. And then too there is the significant fact that being able to write well hardly guarantees that one can teach others how to write well.

There may be—from an unlikely quarter—a ray of hope in one recent finding in a study of more than 600 leaders in academia, government and business. The study discovered that while there is a strong consensus “that students need to learn thinking and communication skills, business leaders tend to disagree with educators about the effectiveness of higher education in teaching students what they all agree students need to know....”<sup>21</sup> Given a growing tendency for universities to enter into partnerships with business and an attendant willingness to listen closely to what skills business leaders are telling them they need to provide to their graduates, it may be that pressure on this front will assist in a battle for increased attention to communication skills that has hitherto been championed chiefly by humanists.

## Notes

<sup>1</sup> The fact that UCI has an upper-division writing requirement means that all junior-level transfer students must complete at least a quarter of coursework in writing at UCI.

<sup>2</sup> A description of the external-review process is available in the UCI WASC Reaccreditation Workroom.

<sup>3</sup> Recommendation 13 of the lower-division writing review report, 1998.

<sup>4</sup> The recommendation that there be a Gateway Exam at approximately the point at which students move from the lower to the upper division itself marked a retreat from the more ambitious goal of mounting a program of assessment that would track students throughout their undergraduate careers. The most-discussed models of the Gateway Exam included the following as likely elements: a timed essay written to a prompt about a short text (including the interpretation of graphical data) and then evaluated by a trained panel following a normed rubric. Additional aspects might include rewarding good work or sanctioning poor work, the latter to include being held back from upper-division writing or having a transcript notation indicate failure or repeated failure.

<sup>5</sup> This view has been expressed only by some of the Writing 39A-B-C course directors—a very small group, but an influential one insofar as about half of UCI students satisfy lower-division writing via this sequence. For this reason, the 39 curriculum, by and large not commented upon in the recent writing reviews, perhaps deserves some further attention when we look also at the question raised by reviewers whether Humanities Core Course is devoting adequate time to composition.

<sup>6</sup> In order to measure *improvement*, as opposed to *competence*, two data points are of course necessary. A proposal made shortly after the first of the two writing reviews was completed would have measured students' improvement by administering, at some point later in their undergraduate careers, a second Subject A examination to those who previously had taken the exam. In spite of the obvious logic and efficiency of this model, it was met with stiff resistance from local writing experts who believe that the Subject A test is itself intrinsically flawed.

<sup>7</sup> The Writing Board is appointed by the Academic Senate Committee on Committees. It advises CEP but also serves as liaison with the academic units and the Office of Academic Affairs. It is not exactly a subcommittee of CEP (because it has only two members who overlap with the membership of CEP—the Dean of Undergraduate Education and one CEP representative—and because it has some quasi-independent responsibilities). Its charge reads as follows:

The UCI Writing Board shall advise the Council on Educational Policy on campuswide policies concerning instruction of writing, on implementation and enforcement of existing policies governing writing requirements, and shall serve as liaison with academic units and Academic Affairs on matters concerning the implementation and enforcement of such policies. The Board is empowered to gather information concerning the teaching of writing in courses on campus, students' writing performance, faculty perceptions of student writing problems and achievements, and student perceptions of writing instruction. The Board shall conduct a survey of academic units on campus to determine the courses in which there are significant writing assignments and the nature of the writing assignments. All writing requirement courses shall be reviewed at the end of three years. The Writing Director shall act as coordinator of all writing courses, and shall serve as liaison with the academic units, the UCI Writing Board, and the Council on Educational Policy. The Writing Director shall provide the Council on Educational Policy with information concerning the various writing courses offered, whether or not such writing courses meet the breadth requirement, and students' writing performance.

<sup>8</sup> Since TAs bear the major responsibility for the teaching of undergraduate writing, their participation in a “Writing Forum” is critical. In addition to discussing their role in general, issues of composition training and specialized ESL composition training should also be addressed.

<sup>9</sup> Over 1000 students satisfy their lower-division writing requirement in this course each year, roughly a third of freshmen.

<sup>10</sup> This sequence satisfies lower-division writing for the approximately 2,700 students not enrolled in Humanities Core.

<sup>11</sup> ESL currently enrolls approximately 200 students who are required to complete a sequence of courses (anywhere from one to three) before embarking upon the lower-division writing requirement.

<sup>12</sup> LARC is UCI’s chief provider of academic support services. It offers group and individual sessions in writing (among other disciplines and skills), sometimes keyed to specific courses (“adjuncts”) and sometimes to more generic topics (“workshops”).

<sup>13</sup> Both external review committees called for substantial additional FTE in the area of writing. The benefits of a Campus Writing Coordinator position will be at once to enhance the prestige of the teaching of writing, to give the campus as a whole a greater role in communication through the Dean of Undergraduate Education, and to provide an expert focal leader to encourage consensual policy and action on writing in key courses. The Dean of Undergraduate Education and the Dean of Graduate Education are the only campuswide academic deans at UCI.

<sup>14</sup> In response to the recent reviews of writing, the 39A-B-C course coordinators, the Director of ESL, and the Director of LARC and LARC writing counselors met as a group for the first time in winter quarter 1999.

<sup>15</sup> And yet faculty frequently complain that students do not know the discourse of their major. There is sometimes a strongly held belief that basic composition should prepare students for multiple discourses.

<sup>16</sup> The Director of ESL reports that roughly half of students identified as “ESL” at UCI are not very comfortable in either reading or writing their nominal first languages. And below is a writing sample from another kind of student who lacks a strong first language, writing to the Director of ESL to protest the decision to be placed in an ESL class (quoted with permission):

I really not need humanity 20 writing class because since time I come to United State all my friend speak english. Until now everyone understand me and I dont' need study english. I don't know vietnam language. I speak only english. I have no communication problem with my friend in dorm. My english teacher in high school key person to teach me. My teacher explain to me that how important the book was for the student and persuaded me read many book. I get A in English through out high school and I never take ESL. I gree that some student need class but you has not made a correct decision put me in english class. Please do not make me lose the face. I have confident in english.

We should perhaps stress that by “language-impooverished” we emphatically do *not* mean students whose native language happens not to be standard English (indeed, almost nobody grows up speaking Standard English if by that term we mean the formal language employed in academic discourse), but those who grow up in environments in which there is relatively little talking and less reading.

<sup>17</sup> p. 3.

<sup>18</sup> (1998) *Reinventing Undergraduate Education: A Blueprint for America's Research Universities*. New York: The Carnegie Foundation for the Advancement of Teaching, Recommendation V., p. 24.

<sup>19</sup> Of course speech experts are typically *not* experts in ESL.

<sup>20</sup> American Association of State Colleges and Universities (1999). *Facing Change: Building the Faculty of the Future*. Washington, DC, p. 23.

<sup>21</sup> Immelwahr, John (1999). *Taking Responsibility: Leaders' Expectations of Higher Education*. New York: Public Agenda, for The National Center for Public Policy and Higher Education, p. 16.

## CHAPTER FIVE: CHALLENGES FACING UCI

### MANAGING ENROLLMENT GROWTH

California is in the midst of dramatic changes—educational, economic, demographic, and social. To carry out its mission as a public research university, to meet the changing needs of the California and national economies, and to continue to provide access for a growing population of high school graduates, the University of California must increase enrollments. Growth in both graduate and undergraduate enrollments is essential to the University's mission as a public research university. Each student population is essential to this mission. Considering them together allows us to craft the essential balance that produces the instruction and research commitments to the State's citizens.

In 1988, The Regents of the University reviewed a long-range enrollment plan that was intended to prepare for the enrollment of undergraduates and graduates through the year 2005-06. While the underlying population dynamics changed significantly enough to justify a revision that was presented to the Regents in 1995, the 1988 Plan (and 1995 modification) created a structure that still guides the UC system's planning today.

Enrollment is determined by campus capacity and student demand, moderated by eligibility conditions for admission set forth in the California *Master Plan for Higher Education*. UC Irvine's enrollment is forecast to increase by 11,900 students over the next 10 years as indicated in the chart below.

**University of California, Irvine  
Budgeted FTE Enrollment Growth through 2010-11**

2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	Increase 2000-2010
15,700	16,800	17,800	18,700	19,600	20,500	21,400	22,300	27,600	
	1,100	1,000	900	900	900	900	900	900	11,900

**GRADUATE ENROLLMENT ISSUES**

At the broadest level, there is the question of the distribution of growth between graduate and undergraduate students. The Office of the President's growth plan for UCI reflects an increase of about 200 graduate students per year (of the 900 or more new students). The underlying decision for the campus is whether this is an appropriate proportion of graduate students. There are related issues raised elsewhere in this self-study regarding the distribution of graduate students across academic programs, across Ph.D. versus professional degree programs, versus master's degree programs, and so on.

As undergraduate enrollments continue to increase, more graduate students will be needed to enable UCI to recruit and retain the highest quality faculty, maintain the high level of University research productivity, and preserve the overall research environment that characterizes UCI at both graduate and undergraduate levels. While graduate enrollments are determined by workforce needs, program and student quality, and resources for program and student support, it is important that the benefits to the University's missions which are provided by graduate students, once they are admitted, also be emphasized.

The quality of the University's teaching and research programs is dependent in large measure on the quality of its faculty. High-quality faculty are attracted to UCI by the opportunity to teach and work with excellent graduate and undergraduate students, and they rely on graduate students as apprentices and colleagues in conducting research. Graduate students are a critical part of the research teams that have enabled UCI to attain the highest levels of research excellence and productivity; without them, the faculty's ability to secure extramural funding and produce research would be weakened. Graduate students are often faculty members' only true colleagues in specialized subfields. Therefore, recruitment of high-quality graduate students is critical to the University's teaching and research programs.

### **Graduate Students Support Undergraduate Programs**

Graduate students contribute to the climate of discovery, excellence, and excitement that defines both undergraduate and graduate education at the University. As teaching assistants, graduate students enhance UCI's undergraduate instructional mission by leading small discussion groups and laboratory sections, under faculty supervision. In large-enrollment courses, these discussion groups give the whole class a cohesion and energy that might otherwise be difficult to achieve. The presence of graduate students makes it possible for UCI to offer undergraduates a wider range of perspectives and delivery modes. Graduate students also often mentor/train individual undergraduates who are enrolled in individual research projects (199 courses). Graduate students, especially women and minority students, often serve as mentors for undergraduates from those groups, encouraging such students to pursue advanced education.

## **Graduate Students Support Research Programs**

Graduate education contributes significantly to the research that fuels new businesses, enriches society and contributes to our quality of life. Most Californians recognize that research conducted in the UC system plays a critical role in the economic growth, medical breakthroughs, and scientific advances that improve individuals' lives, as well as in helping us to understand and enhance our society, culture, and the life of the mind. However, what is not always appreciated is how central graduate education is to university research. According to the Association of American Universities (AAU), "To a far greater extent than in other countries, graduate students contribute to the creativity and productivity of U.S. academic research . . . In this country, graduate education and research are conducted in the same place by the same people, and both activities are enriched by their fundamental interconnections" (Richard Attiyeh in testimony submitted to the U.S. House of Representatives Committee on Education and the Workforce, Subcommittee on Postsecondary Education, Training, and Life-Long Learning, June 17, 1997, on behalf of the AAU and other associations).

## **Quality of Graduate Student Applicants**

Applicants for admission to graduate study at UCI must apply for acceptance into a specific graduate program to work toward an advanced degree. Applicants may apply to only one program at a time. A general requirement for admission is that the applicant hold the degree of Bachelor of Arts, Letters, Philosophy, or Science (or an acceptable equivalent) from a recognized academic

institution. A scholastic average of B (3.0 on a 4.0 scale) or better is required. Individual graduate programs may have special requirements for admission. The requirements for admission to post-baccalaureate-degree study leading to California education credentials are the same as the general requirements for admission to graduate degree programs.

Each applicant's file is evaluated by the admissions committee of the specific graduate program on the basis of such factors as academic subject preparation, scholarship, letters of recommendation, test scores, and examples of previous work. A critical question is whether or not the applicant's academic objectives can reasonably be satisfied by a graduate program offered at UCI. The University of California does not have the capacity to accommodate all applicants who meet the minimum admission requirements.

### **Financial Support for Graduate Students**

Excellent graduate students are also in demand. While the excellence of the programs is a major draw for good students, adequate financial support is also a prerequisite. To attract high-quality students in a competitive environment, and to facilitate the timely achievement of their degrees, UCI must ensure that financial support is available in adequate amounts, appropriate forms, and for a period of years appropriate to each student's program of study.

Financial support for UCI's graduate students is available through the following major sources: teaching and research assistantships, full or partial fee remission, merit-based and diversity-based awards, and need-based financial aid. Prospective graduate students are encouraged to apply for support from all

potential sources, since award packages frequently are the result of a combination of multiple fellowship types. In certain fields, individual extramurally funded fellowships are available on a competitive basis. The type of aid and its duration can matter as much as the amount. Doctoral students, because of the length of time involved in attaining their degrees, need multiyear support that is closely tied to their learning experiences.

Fellowships are an especially important element of support. In 1998-99, UC Irvine provided \$9,655,000 in Fellowship awards to assist graduate students. Master's students in shorter-term professional programs, many of whom are entering well-paying fields, can and are willing to take on greater amounts of debt while they are in school. However, it is important to be sensitive to the increasing debt burden borne by students in professional programs, which has doubled in the past decade.

Financial support for students who are not California residents presents a special problem. If UCI is to attract the nation's and the world's very best students, it must find ways to make competitive offers. In the past decade, nonresident tuition has doubled. These large tuition increases have had a disproportionate impact on graduate education because a higher fraction of graduate students than undergraduates are nonresidents, especially in their first post-baccalaureate year, and a higher fraction are dependent on student support fund sources. These sources, however, are not growing as rapidly as the fee increases. In addition, support of foreign students requires payment of nonresident tuition for several years. This hampers UCI's ability to enroll foreign students. This problem is acute in programs such as foreign languages, in which native foreign language speakers are integral to the program.

### **Ad Hoc Study Group for Graduate Education**

The UCI Academic Senate has taken a proactive role in addressing the various issues that are crucial to increasing the enrollment of the highest quality graduate students. In June 2000, the Senate Chair convened an ad hoc study group to provide recommendations related to enhancing graduate student recruitment, retention and support. This group is chaired by the Senate Chair and consists of representatives of the Graduate Council; the Council on Research, Computing and Library Resources; the Council on Educational Policy; the Council on Rights, Responsibilities and Welfare; and the Council on Planning and Budget. The Vice Chancellor for Research/Dean of Graduate Education serves as an ex officio member. The study group is charged with assessing the current status of existing graduate programs, graduate recruitment and graduate support; with identifying areas of concern for further study; and with evaluating the role of new graduate programs as UCI continues its intensive growth. The group anticipates providing its report during the 2000-01 academic year.

### **UNDERGRADUATE ENROLLMENT GOALS**

#### **Capacity/Demand**

The UCI Enrollment Council, comprised of faculty and administrators, annually reviews campus enrollment figures and offers a recommendation to the Executive Vice Chancellor on the sizes for the upcoming freshmen and transfer classes. In planning for the 1999-2000 entering class, the Council recommended that, at the freshmen level, UCI seeks to enroll the highest academic quality applicants

without regard to academic unit distribution, except in units where there are limits on capacity. This represented a change from earlier practices where more attention was given to the balance among certain units. The Council also recommended that new transfer students be permitted to enroll in the winter quarter (traditionally the campus had admitted new undergraduates for the fall quarter only), in order to distribute enrollment growth over two quarters (fall and winter). This directive responded to interests external to the campus, which are promoting a strengthened community college transfer function.

In the early 1990s, UCI was able to offer admission to nearly every UC-eligible applicant who applied to the campus at both the freshmen and advanced standing levels. Since 1995, however, admission has become increasingly selective, particularly at the freshmen level and in certain academic disciplines: for example, Biological Sciences in the mid-1990s and, more recently, Engineering and Information and Computer Science.

### **Eligibility**

The *Master Plan for Higher Education* stipulates that the University of California draw from a pool of applicants who comprise the top eighth of California's graduating public high school seniors. At the advanced standing, or transfer, level priority for admission consideration is given to applicants who are California Community College students. Responsibility for defining UC eligibility has been delegated by The Regents to the faculty of the University.

The Board of Admissions and Relations with Schools, a committee of the University's Academic Council with a faculty representative from each UC campus, determines admission criteria Universitywide. Within this broad framework, the Committee on Admissions and Relations with Schools on each campus determines local selection policies.

Campus guidelines for the implementation of University policy on undergraduate admissions were reviewed in 1996. These guidelines incorporate important principles for a selective public institution: broad access, academic excellence, and flexibility in order to achieve enrollment goals. Together with the annual campus enrollment plan, these guidelines are used to select each year's incoming class.

### **Enrollment Growth**

The recent projections of high school graduates from the California Department of Finance (DOF) have caused the University to reconsider the number of students UC may need to accommodate by 2010. At the present time, each UC campus has been asked to consider how enrollment on the campus might be expanded. Irvine designated by the Office of the President as a growth campus, will be expected to accommodate even more undergraduate students than appears in the campus's Long-Range Development Plan. This will have implications for campus programs, distribution among majors, and facilities, including classroom space and student housing.

The growth in undergraduate education anticipated for the UCI campus between 2000 and 2010 provides exceptional opportunities for strategic planning in the

distribution of students across programs and majors. Assuming the current Office of the President growth projections to be as high as 7 per cent per year, UCI should expect at least 900 new undergraduate students per year throughout this decade. It is also possible that UCI's growth will exceed this. A number of critical decisions should be made regarding the management of this growth.

At the undergraduate level, a first-order strategic decision has been made to focus more aggressively on transfer students than in the past. The primary criterion for selection in recent years has been student quality, as measured by an analysis of student's SAT I quantitative and verbal scores, and grade point average in UC-relevant courses. Variations on this criterion might place greater weight on a valued element, such as Verbal scores, GPA, or SAT IIs. It is clear that student quality will continue to be a powerful driver of any selection plan. At present, there is some inter-school variation in quality at UCI. Transfer students enroll most heavily in the School of Social Sciences, the School of Humanities and the School of Social Ecology.

A second factor that the campus continues to consider in admissions is student diversity, whether measured in socioeconomic, geographic, experiential or other background characteristics. The choices here are whether to emphasize specific factors, and if so, which ones and with what weight.

A third dimension relates to the demand for certain majors. One aspect of this demand is the majors that students desire to enroll in. Another aspect of demand for certain kind of majors comes from the State government and from employers. At present, that demand is particularly evident in computer science and some aspects of engineering, areas where the job market is extremely strong for

bachelor of science graduates. We know that this market will evolve over time, but the campus does have to take into account the expectations from the State and employers that these market needs should be considered to some extent. The demand for the most heavily enrolled majors reflects a combination of student interest, market conditions, attractive curricula, and other factors. The table below indicates enrollment by academic unit for 1999-2000 at UCI.

University of California, Irvine Headcounts by Academic Unit and Level Three-Term Average 1999-2000							
Academic Unit	Freshmen	Sophomores	Juniors	Seniors	Under-graduates	Graduate Students	TOTAL
Arts	171	190	219	318	898	109	1,007
Bio Sci	751	487	460	819	2,517	164	2,681
Education	0	0	0	164	164	35	199
Engineering	467	295	279	453	1,494	304	1,798
Humanities	206	240	338	532	1,316	327	1,643
ICS	355	237	219	337	1,048	168	1,216
Interdis Stud*	12	16	23	25	76	4	80
Management	0	0	0	0	0	864	864
Physical Sci	128	145	164	258	695	254	949
Soc Ecology	185	161	480	629	1,455	147	1,602
Soc Science	661	659	1,180	1,545	4,045	215	4,260
Unaffiliated	784	528	75	7	1,394	0	1,394
<b>Total</b>	<b>3,620</b>	<b>2,958</b>	<b>3,437</b>	<b>5,087</b>	<b>15,102</b>	<b>2,591</b>	<b>17,693</b>

Sources: Student Information System file and COM records third week, fall 1999, winter 2000, and spring 2000.

NOTE: New graduate Molecular Biology and Biochemistry majors are counted in Biological Sciences. Interdisciplinary Studies (African American, Asian American and Women's Studies) are part of the School of Humanities 2000-01 and thereafter.

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A second table provides information on instruction delivered in terms of student credit hours for 1999-2000.

<b>University of California, Irvine</b> <b>Student Credit Hours by Academic Unit and Level</b> <b>Three-Term Average 1999-2000</b>							
Academic Unit	Lower Division	Upper Division	Under-graduate	Graduate Level 1	Graduate Level 2	Total Graduate	TOTAL
Arts	8,333.70	5,695.80	14,029.50	1,352.00	0	1,352.00	15,381.50
Bio Sci	10,355.70	10,673.90	21,029.60	1,887.60	484.30	2,371.90	23,401.50
Education	353.33	2,411.30	2,764.60	1,645.00	18.30	1,663.30	4,427.90
Engineering	3,254.70	5,754.20	9,008.90	2,612.70	510.00	3,122.70	12,131.60
Humanities	34,155.30	9,798.00	43,953.30	2,799.00	1,020.30	3,819.30	47,772.60
ICS	6,650.00	4,286.00	10,936.00	1,806.00	340.70	2,146.70	13,082.70
Interdis Stud	1,744.70	1,157.70	2,902.40	69.30	17.30	86.60	2,989.00
Management	996.00	1,486.70	2,482.70	5,020.70	98.00	5,118.70	7,601.40
Phy Sci	31,216.00	4,574.00	35,790.00	2,306.30	1,195.30	3,501.60	39,291.60
Social Ecology	7,156.70	11,782.00	18,938.70	1,673.40	172.00	1,845.40	20,784.10
Social Science	34,315.30	24,720.30	59,035.60	2,098.70	585.10	2,683.80	61,719.40
Other	1,237.30	280.70	1,518.00	0	0	0	1,518.00
Total Campus	139,768.70	82,620.60	222,389.30	23,270.70	4,441.30	27,712.00	250,101.30

Sources: Student Credit Hours Report, fall 1999, winter 2000 and spring 2000  
4/23/00

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In 1999-00, the 10 most popular majors were: Biological Sciences, 2,517; Information and Computer Sciences, 1,048; Economics, 1,027; Electrical and Computer Engineering, 855; Social Sciences (general), 821; Cognitive Sciences, 739; English and Comparative Literature, 650; Political Science, 574; Psychology and Social Behavior, 539; Sociology, 538.

There are interesting structural features regarding some of our most heavily enrolled majors that should be considered as the future enrollment plan is developed. For example, the very large number of Biological Science majors, one

of the largest in the country, has been mainly driven by students who hope to pursue a career in the medical/health professions. To respond to this specific circumstance, it would be possible to offer UCI students a minor or concentration in “pre-medical education” that would include all courses necessary for admission to medical school. If such a program were offered as an alternative to the current situation wherein only Biological Science majors can enroll in many of these pre-medical courses, students could be redistributed away from the Biological Science major itself. This might be appropriate if we determine that the proportion of students in the Biological Science major is too large to be manageable or desirable from the campus perspective. The student credit hour workload of Biological Science would only diminish somewhat under these conditions, but the pressure to service a very large number of majors with the available faculty would be reduced, and class size and even educational quality might improve. It also might align majors in Biological Sciences more closely with the research foci of many faculty.

The second largest major within a single unit is Information and Computer Science and that academic unit, together with the School of Engineering, is slated for even greater growth. The latter's growth is being driven by Electrical and Computer Engineering, the fourth largest campus major.

Economics, the third largest major, arguably includes many students who would prefer a business degree but do not have this option at UCI. The Graduate School of Management's (GSM's) minor in Management is being revised and expanded so that it can be combined more effectively with a diversity of majors, from the humanities to the physical sciences. One benefit for GSM is that such an expanded minor will generate substantial undergraduate student credit hours to

justify new faculty FTE (since the Office of the President's plan limits growth in faculty FTE for GSM). One potential advantage for UCI is that the enhanced minor in Management may bring UCI very good students who currently choose not to come here because of the absence of a business major.

The fifth largest major at UCI, Social Science, is not a common major at the national level. In the quite popular School of Social Sciences, this is the single largest major in terms of B.A. degrees awarded. The major has been improved in recent years through the addition of four specific specializations (Multicultural Studies, Public and Community Service, Research and Analytical Methods, and Social Studies). It remains, however, a rather broad and somewhat unfocused program, which is the responsibility of no particular department. It would be interesting to assess student satisfaction with this and many other majors, both during the students' period at UCI and, more importantly, at some point after they have completed their undergraduate degree.

The sixth largest major is the Psychology major offered by the Department of Cognitive Sciences in the School of Social Sciences. If the Psychology major offered in that School were combined with the Psychology and Social Behavior major (the ninth largest major at UCI) offered by the School of Social Ecology, the result would be a large number of students majoring in some aspect of psychology—indeed, the second largest group of undergraduates on campus. The differentiation between these two majors is generally clear to each participating faculty group, but it is less obvious how clear the differences are for students, and particularly for those students who select one of these two majors before they actually enter UCI. It is worth exploring whether the two tracts should be articulated and distinguished more clearly from each other, or whether those

teaching in the two tracts should be encouraged to collaborate more fully in order to provide a single, more comprehensive major with alternative emphases.

Nearly half the undergraduates in the School of Humanities are majors in English, the seventh largest major on campus (with 10 times the enrollment of the Comparative Literature major, housed in the same department).

In comparing UCI's array of majors to those on other campuses in the UC system, there are only a few striking differences regarding the most popular majors. Two of the campuses have very strong biochemistry programs, although it may be that UCI students interested in biochemistry select either Biological Sciences or Chemistry as their major here, or decide to double-major in both. (In fall 1999, 53 students enrolled as double majors in Chemistry and Biological Sciences. In spring 2000, there were 71 such double majors.) Two of the campuses also have very strong Sociology majors, an area where UCI is now developing strength and where majors have been growing significantly in recent years.

Another strategic question for the campus is whether to invest resources in majors that are perceived to be very important directions for academic undergraduate education in the future. That is, are there "21<sup>st</sup> century majors" that UCI should establish and develop? Many interesting new majors could emerge through the combination of existing or emerging disciplines. Recent UCI initiatives in certain areas, such as Biomedical Engineering, Digital Arts, and Earth Systems Science are examples, as are Bioinformatics, Materials Science, and so on. Several existing majors seem to have a 21<sup>st</sup> century major quality. One is Information and Computer Science, a major whose growth seems to be limited only by the capacity of the faculty and by facilities, since the students applying for this

program reflect the highest quality (measured by their SATs and GPAs) on the campus. Another new-century major is International Studies, newly offered by the School of Social Sciences, which has already attracted some 400 students.

An orthogonal issue is the question of timing in the declaration of major. There has been a historical tendency at UCI to encourage freshman students to arrive with a declared major. Yet we know that many high school students are unprepared to make an appropriate choice of major, in part because they are not familiar with all the majors offered at the University and in part because they might benefit from testing their own abilities and interests against the array of actual programs on the campus prior to selecting a major. Among recent UCI students, there has been a relatively high rate of change of majors. The rate seems to vary substantially from school to school, but it is possible to conclude that, in many areas, between 30 percent and 70 percent of the students actually change not only majors but the school in which their newly chosen major is offered.

Many other universities, including some of the most prestigious campuses in the UC system, not only discourage students from choosing their major prior to arrival but preclude that choice for most students. At UCI, the “Undecided/Undeclared” (U/U) category for freshmen and “Unaffiliated” for sophomores constitute our normal options for a student who does not yet opt to select a major. In recent years, the number of freshmen students applying to UCI in the U/U category has consistently been larger than that for any school and these U/U students have usually constituted the largest or second largest freshmen cohort (almost 25 percent of our new freshmen). Programming has been implemented to provide the U/U students in fall and winter quarters with two-unit courses which offer extended orientation to the campus. They also receive three

quarters of mandatory advising by faculty and academic counselors and other services intended to assist the students in adapting successfully to UCI and selecting a major by the end of their freshman year.

### **Establishing New Majors/Minors**

Planning for new majors is typically a bottom-up process, propelled by faculty interest. Changes in a discipline, or a perceived new demand by students, leads a faculty group to propose a new major first to their colleagues in the department and school, and eventually to the Academic Senate for approval. The process of winning approval and funding for a new major within a single department or school is always arduous, but at UCI, which is organized around a series of more-or-less autonomous schools, the process of promoting an inter-school major is particularly difficult. Women's Studies, now a successful major, took years of planning among several schools and programs before it moved from status as a minor to a major. Only the determination of a few faculty kept the new major on track as it made its way through the system. The rigorous review of proposed new majors and minors is necessary to ensure intellectual integrity and careful financial planning, but it can also discourage inventive thinking about the future, especially the planning of inter-school majors in a climate that currently encourages each school to protect its "turf."

Occasionally, what might be called a top-down model of winning support for a new major has been successful. The popular East Asian program in the School of Humanities (now encompassing Asian American Studies, Chinese/Japanese Language and Literature, and East Asian Cultures) was encouraged from the outset by a forward-looking administration that saw the advantages of such a

program in a university whose students were increasingly interested in and connected to the Pacific Rim. The program was approved more quickly than most, and has thrived.

### **Improving the Quality of Undergraduates**

Beginning with the fall 1996 admission cycle, the unprecedented increase in freshmen applications provided the campus with an opportunity to be more selective. The GPAs and average SAT scores of admitted students improved modestly with each successive entering class. At the same time, the number of students admitted in exception to published admission requirements decreased. Revised campus selection criteria, first implemented for the fall 1997 entering class, called for a comprehensive review of all applicants using academic, co-curricular, or experiential skills, knowledge, and abilities which, when taken in concert with the academic profile, provide the most comprehensive view of an applicant's potential for success at UCI. The Committee on Admissions and Relations with Schools stipulated that the first 60 percent of the fall 1997 and subsequent entering classes be selected on academic criteria alone and the remaining 40 percent be selected on a combination of academic and personal factors.

Although the classes admitted using the new guidelines have not yet achieved graduation, there is evidence that the recent freshmen classes are achieving academic success. The first-year continuation rates of each class since 1995 have been the about same as the UC average, or slightly above it. A validity study conducted on the class which entered fall 1997 indicates that, on average, students are finishing their freshmen year with a 2.85 GPA. And, anecdotal evidence

provided by faculty members suggests that the most recent cohort of entering freshmen appears to be more engaged in their learning and is more involved in the campus in general.

Recently celebrating its tenth anniversary, the Campuswide Honors Program (CHP) has been an important asset for enrolling a high-achieving student body. In addition to this program, many academic departments offer discipline-specific honors programs. Since 1995 the campus has implemented an aggressive strategy to expand the number of Regents' Scholars, the highest award given to an entering student.

### **Achieving Diversity**

As a public institution, UCI embraces its responsibility to enroll a student body that encompasses the broad diversity of backgrounds of California including ethnicity, socio-economic, cultural, and geographic and age characteristics. Although the means and methods by which the University has approached this imperative have been altered in recent years by Regental mandates and State law, our view that California's diversity is an asset and that the University has an important role in training the leadership of a pluralistic society has not wavered. The design of the fall 1997 selection guidelines purposely incorporated principles that attempt to ensure consideration of a diversity of perspectives, experiences and talents. Specifically, in spite of the increased pressures for enrollment in recent years, selection criteria specify that the campus will select students from among *the entire range* of the top 12-1/2 percent (top one-eighth) of the students who constitute our applicant pool. In addition, the application of admissions principles allow for the selection of students on multiple criteria. Evidence of the success of

the new procedures can be seen in the number of underrepresented minority students who have been offered admission in the post-SP-1 and Proposition 209 era. Further evidence of the success of UCI's efforts includes the reduction in numbers of students admitted by exception, and the successful efforts to enroll underrepresented students in academic areas, e.g., science and technology, where their numbers have traditionally been low nationwide.

UCI's Center for Educational Partnerships was established in 1996 to pursue a sustained campus commitment to improving the quality of public education. UCI outreach takes three paths to achieve this goal: a focus on strengthening academic preparation, curricular enrichment, and professional development of teachers. In spite of our modest success in the post-Proposition 209 era, however, it remains a challenge to enroll underrepresented minority students, particularly African American and Native American students.

Approximately 30 percent of each entering freshmen class reports being the first generation in the family to attend a higher education institution. In addition, UCI has a large percentage of students on financial aid—in fact, the third highest percentage in the UC system, behind only UC Riverside and UC Davis. UCI also has the second highest percentage of UC students on federal grants and the largest percentage of Cal Grant recipients of any of the UC campuses. These grants are awarded on the basis of need and academic merit, reflecting the high number of low-income, high-achieving students who enroll at UCI. One challenge the campus faces in light of our constituency is to monitor the income and aid data on a regular basis to ensure that low-student-income UC campuses, like Irvine, are treated fairly in the annual UC aid allocations.

UCI is quite possibly the most culturally diverse university in the nation. The linguistic background of our students provides a different measure of cultural diversity. For most of the decade about 35 percent of new freshmen reported that their first language was a language other than English; an additional 30 percent indicated that they were raised bilingually. The remaining 35 percent were raised speaking only English. Most recently, however, there has been a marked decrease in the percentage of students for whom English was not a first language. In fall 1999 the number fell to 22 percent of the new freshmen; an additional 38 percent were raised bilingually and 40 percent spoke only English at home.

Traditionally, California residents have comprised 97 percent of the students enrolled on the campus, with the remaining 3 percent comprised of out-of-State residents or international students. UCI enrolls the majority of its students from Los Angeles County and Orange County. In recent years—as the reputation of the campus has become better known and widespread, and recruitment activities have been broadened to focus on different regions in the State—UCI has experienced increased enrollments from Riverside, San Bernardino, San Diego, and the Bay Area counties. In addition, UCI has made a concerted effort to reach out to high schools and colleges in California’s San Joaquin Valley.

UCI primarily serves a traditional-age student body. According to recent data, the average age of UCI undergraduates is 21. A variety of services are available for older students, however, including housing for students over the age of 25 and childcare services.

### **Upper-Division to Lower-Division Ratio**

California's *Master Plan for Higher Education* suggests that each UC campus maintain a 60:40 percent ratio of upper-division students to lower-division students. In 1998-99, UCI's student body was 58.8 percent upper-division students, very close to what the Master Plan specifies. UCI is a growth campus and we are admitting as many qualified transfer students as are in the applicant pool. Outreach efforts to prospective transfer students have been expanded in recent years and appear to be bearing some fruit. For example, the number of transfer students applying for fall 1999 was 4,952 compared to 4,244 for fall 1998. In addition, the campus seeks to enroll additional transfer students during the winter quarter. The reality of enrollment growth, however, is that the pressure for access is most severe at the freshman level.

### **Transfer Student Issues**

At the transfer level, admission to UCI was competitive throughout the 1990s. During the mid-1990s the campus began to reduce the number of lower-division students (students entering with less than 56 transferable semester units) in favor of students who had completed 56 or more transferable units. For the class entering in fall 1998, new UC guidelines were implemented which stipulate that all transfer students must complete at least 60 transferable semester units and a strengthened pattern of academic course work in order to be eligible for admission to the University. In addition to the basic UC-eligibility requirements, many of UCI's academic units now require completion of specific course work as preparation for certain majors. The average GPA of entering transfer students has consistently been a 3.0 or higher, and very few students are admitted by exception

to the UC transfer requirements. Performance data on enrolled transfer students suggest that these students perform on par with native students. Data collection and analysis continues on this significant cohort of undergraduates.

### **Value of Residential Experience**

The small-scale buildings that comprise UCI's residence halls provide excellent opportunities for social interaction, student government, and leadership experience. Each hall has distinctive characteristics and often focuses on a specific interest or life-style such as the arts, the humanities, the outdoors, or student diversity. UCI's residence halls house approximately 2,500 single undergraduate students under the age of 25. Each hall houses one student Resident Assistant and from 40 to 60 students.

### **Expanding On-Campus Housing Opportunities**

It is important to note that the achievement of the housing targets in the UCI Long-Range Development Plan is shaped primarily by two facts: first, the target itself, which is to house on campus 40 percent of the UCI student population, and, second, the fact that Housing is a self-sufficient auxiliary service of the University of California. The first statement speaks for itself. The latter statement means that the housing operation on campus operates totally on student rents. There are no "subsidies" from any other fund source, including Registration Fees and Legislative allocations. All the expenditures (including interest and principal payments on the construction bonds sold to pay for building the facilities) must come from student rents. In this sense, the housing operation is a business. The only major difference is that its budgets do not include a profit.

Under these circumstances, four factors must be addressed in any discussions regarding expansion:

- Demand—Because Housing is a self-sufficient auxiliary enterprise, there needs to be demonstrated sufficient demand for its product in order for new projects to be financially possible.
- Costs—The costs associated with new construction, both those of the construction itself and the cost of the money (interest rates) needed to finance the construction, must be explicitly factored in.
- Off-Campus Housing Stock—It is important to assess off-campus housing availability and rental rates in the immediate area of the University.
- Financial Viability—Weighing the three factors above, will UCI be able to build residential facilities that can be marketed effectively and rented successfully?

Because of these foregoing issues, constructing housing to reach the LRDP targets is a delicate process. If UCI overbuilds, money will be siphoned from the academic mission of the campus. If UCI underbuilds, it will not be successfully solving the demands and needs of its students.

Two concepts which have had a major impact on the recent dialog about future housing are density and third-party construction. Each of these can have a major impact upon the four issues enumerated above. The decisions around density boil

down to the maximum use of land versus construction of facilities that students will desire to live in. The product density that attracts students is no more than 3-4 stories. With land in Irvine being limited and worth \$700,000 per acre (1999), the arguments are clear. With respect to the third-party development concept, there are tradeoffs as well. Private development projects (constructed outside of the University procedures) can be built significantly less expensively than purely University projects.

### **Financial Aid for Undergraduates**

UCI provides both need-based financial aid and merit-based scholarships as an integral part its enrollment management efforts. Over \$120 million in need-based aid is provided annually to UCI students from Federal, State, institutional, and private sources. As part of a comprehensive scholarship program to enhance student recruitment, retention, and success, over \$5 million is awarded each year to UCI undergraduates by the Office of Financial Aid and by UCI academic units.

The University of California recently adopted a new financial aid policy, the Education Financing Model (EFM), the focus of which is on providing enough financial aid to maintain the accessibility of the University to all students. As implemented at UCI, the EFM focuses on supporting undergraduates as a partnership among the student, parents, Federal and State governments, and the University. Student aid packages consist of a family (parent and student) contribution, a loan and work expectation, any Federal and State grant funding for which the student may be eligible, and University grant funding in the form of Grant-in-Aid awards. In 1998-99, UCI awarded over \$12 million in Grant-in-Aid awards to UCI undergraduates in addition to loans, Work-Study, and Federal and

State grants. As part of the EFM partnership, students are offered support to fund their entire cost of education. Loan counseling is provided to all financial aid recipients, and extensive new programs are under development to counsel students on managing their finances both as undergraduates and as they enter their careers and undertake repayment of educational loans.

As part of a comprehensive undergraduate student recruitment strategy, each year UCI offers merit-based scholarships to over 1,700 freshmen applicants. Scholarships are offered as part of a multi-level approach that seeks to improve student quality while maintaining the diversity of our undergraduate student population. For 1999-00, UCI has implemented several new undergraduate scholarship programs which will contribute significantly to managing the growth of UCI's student body in coming years. Undergraduate scholarship programs will continue to help ensure the development of an appropriate student body in accordance with campus goals, and are an important focus of campus external fund raising efforts. In cooperation with the Academic Senate, the Office of Financial Aid administers UCI's undergraduate scholarship program.

### **Off-Campus Learning Opportunities**

The UC's Education Abroad Program (EAP) offers students the opportunity to experience a different culture while making progress toward degree objectives. EAP is an overseas study program which operates in cooperation with about 100 host universities and colleges in some 35 countries throughout the world. Each year between 100 and 200 UCI student participants interested in the

language, literature, art, culture, history, government, or social institutions of the countries where EAP study centers are located have the opportunity to gain substantially from first-hand academic experience. Classes in the natural and physical sciences, engineering, and computer science are available at many prestigious host institutions. Full credit is granted for courses satisfactorily completed, and courses are recorded on official UC transcripts. Financial aid eligibility is maintained.

The UC's new UC/DC Washington Center Academic Program enables participants to gain a behind-the-scenes look at the activities that shape and implement the nation's future course, through participating in internships, taking elective course work, doing research, and participating in cultural, social and creative activities. Situated in Washington, D.C., the program is open to students in all majors through a competitive application process. In fall 1999, eight students participated and in spring 2000, 15 enrolled. Students earn 12 to 16 units of course credit, and continue to be registered as full-time UC students. Financial-aid eligibility is maintained. Students live in UC-arranged housing together with students from all the participating UC campuses, providing a social and intellectual community throughout the quarter.

### **Year-Round Operations**

In view of the prospect that the UC system may shortly be obliged to enroll substantially larger numbers of students, each campus has been asked to consider how more intensive usage of campus facilities during the summer months might contribute to meeting this challenge. At UCI, the Executive Vice Chancellor charged the Academic Senate to form a study group to consider this

issue, to help formulate a basis for Senate input into the process of planning for accelerated enrollment growth.

The study group made several recommendations for improving summer session productivity under the current model, including the following:

- Academic units should be encouraged to start their three-quarter (A-B-C) sequence courses at least twice during the year so that B and/or C segments could be completed in the summer session.
- Year-to-year consistency of Summer Session offerings is essential. The Summer Session workload should be included with workload generated during the fall, winter, and spring quarters as one of the bases for decisions about faculty FTE, TA FTE and budgetary support awarded to the units.
- UCI should allow ladder faculty to fulfill some of their academic year teaching responsibilities during the Summer Session.
- The Executive Vice Chancellor should consider using some or all of the Summer Session earnings to encourage more productive use of the campus facilities in the summer.
- The campus should initiate a systematic and scientifically based effort to gather information on to understand what UCI students think about the Summer Session and the ways that it could be made most useful to them.

Further recommendations for improving Summer Session productivity, if additional support for the Summer Session is provided by the State, include:

- Subsidies for classes taught by regular ranks faculty so that it would not be necessary to collect the full costs of instruction through student-paid Summer Session fees.
- State support of Summer Sessions could be used in part to guarantee that courses were staffed to the standards of the regular academic year.
- State funds designated to encourage more summertime use of the campus could be made available to provide appropriate financial aid packages for Summer Session students.
- State funds directed toward expansion of summer usage of campus facilities might be used in part to create financial incentives for academic units to participate.
- Supplemental State support of Summer Session might be used to facilitate a merger and/or better integration of such Summer.
- Session administrative functions as admissions, registration, and catalogue publication with the corresponding operations for the regular academic terms.

## **CHAPTER SIX: CONCLUSION**

The self-study for the WASC reaccreditation review provided an occasion for the campus to reflect on and analyze its ability to meet the challenges and the opportunities presented by two decades of change and projected growth, 1990-2010. The results of those deliberations are described in our accounts of the way we have responded to recommendations of the earlier WASC review (Chapter One); of our attention to activities associated with the three themes we have chosen for this self-study (Chapters Two through Four); and of our plans to enhance UCI's academic mission through the rapid expansion of enrollment predicted over the next decade (Chapter Five). This concluding chapter identifies some key issues from those earlier sections, and it explains how those issues are connected to our more general sense of where the campus is now and how we might best approach planning over the next 10 years.

### **OVERVIEW AND RESPONSE TO THE PREVIOUS WASC REVIEW**

The most general and potentially serious challenge described by the 1991 WASC review was "the silent drag of habit" that characterized our planning—a combination of policies and practices based on the precedent of a much younger and smaller institution that "could be ill-suited for the budget realities of the future." The threat that inspired that concern—the mid-1990s budgetary crisis that caused drastic constraints on resources and growth—has come and gone. Fortunately, UCI weathered that storm better than the reviewers feared we might, in part because of the same decentralized, local planning by units that had caused the reviewers concern. Delegating the responsibility for meeting this crisis to UCI's schools and departments allowed those individual units to make the

mandated reductions in ways most appropriate to them, and the campus survived with minimum negative impact on the quality and effectiveness of its academic programs.

Unpleasant as that experience was, it proved our ability to adjust to rapid and radical changes in the general pattern of growth, an ability that has characterized UCI since its opening in 1965. It also confirmed the general wisdom of planning and administration that places the greatest responsibility for decisions and innovation closest to the heart of the University—in the laboratories, libraries, studios, and classrooms where our teaching and research are done. In particular, this experience demonstrated the extent to which academic planning at UCI *does* interact with budgetary decisions by setting priorities that guide the campus productively in “bad times” as well as good (a concern expressed by the 1991 report). We are confident that this integration of academic and fiscal planning will enable us to adjust equally well to negative fluctuations in the projected growth over the next decade. (Chapter Five presents a detailed account of those projections and plans, especially as they involve graduate and undergraduate enrollment.)

Crisis management is not necessarily the best strategy for better times, of course. Preparing for the present WASC review did help us to identify and understand better the institutional mechanisms by which planning takes place on our campus, and to distinguish more clearly among those strategies more appropriate to support the rapid expansion projected for the next decade. In the past, much of the interaction among faculty, administration, budget officers, and staff responsible for gathering and disseminating data has focused on specific questions and issues, as described in Chapter One, Section Four. Among the most essential issues are those associated with the assessment of undergraduate education, and

we chose that topic as one of the three themes for this review (Chapter Two). Chapter Two describes in detail how we measure the effects or outcomes of our educational efforts and the way those measurements affect our decisions about academic programs and curricula. The strengths of this system are clearly flexibility and focus, which allow for the quick generation of reliable data for specific objectives. In addition to allowing the campus to adapt to rapid changes in the levels of resources and growth, this way of connecting information and decisions enables the campus to identify and address significant problems such as the communication skills of its students, another theme for this review (Chapter Four).

The specificity and focus that are the strengths of this process also limit its efficacy, however. Although this process does in fact integrate "vision, priorities, programs and resources" to a greater extent than previous WASC reviewers suggested (1991 WASC Self-Study, p. 3), that integration occurs mostly on a case-by-case basis. That basis does not present a problem when the highly specific planning is contextualized and supported by the precedent of our first 30 years, or when a budgetary crisis requires extremely flexible and adaptive thinking instead of more comprehensive long-term planning. Nevertheless, reflecting on the opportunities presented by the scale and pace of growth projected for UCI in the next decade, we realize that this process is not the most effective way to do large-scale, innovative planning, especially when that planning must reach across present institutional boundaries and not only accommodate but encourage new schools, new programs, and more extensive interdisciplinary cooperation in research and teaching.

In this light, we consider in Chapter One particularly significant developments over the past two years that have established new venues in which such broader,

more integrated planning is taking place, and in which a much wider range of faculty and staff are participating: (1) the creation of two new Associate Executive Vice Chancellorships (AEVC) charged with multiple aspects of planning (i.e., the AEVC for Space and Enrollment, and the AEVC for Academic Planning); (2) the combination of administrative and Senate faculty committees in the new Academic Planning Group, which is chaired by the Executive Vice Chancellor and includes the Deans of Undergraduate Education and of Graduate Education, as well as the Director of Analytical Studies and Information Management and the new AEVCs; and (3) the initiation in 1999 of campuswide calls for proposals that resulted, that year, in our present consideration of four new professional schools and/or programs (This call will be repeated in 2000 under the aegis of the Executive Vice Chancellor and the Academic Planning Group.) We are confident that these developments will facilitate greater and more systematic integration among research, academic, administrative, and budgetary perspectives, and this increased integration among planning factors will enable us to realize fully the promise of our projected growth.

The other, more specific issues identified by WASC reviewers in the 1991 report are discussed separately in Chapter One of this self-study. In particular, UCI has greatly improved students' access to courses necessary for graduation, and through the expansion of the Campuswide Honors Program (CHP) we have focused significant financial resources and the time and energy of our faculty on the goal of realizing our ambition to "greatness" in undergraduate education. That objective is as difficult to describe in detail now as it was 10 years ago, but it surely must include two notable successes of the CHP: an increased ability to attract students to this program who would be the envy of any campus in the UC system or among private universities, and an excellent record of placing CHP graduates in the best graduate and professional schools, often with prestigious

fellowships and awards. It must also include our campuswide success in two of the other criteria mentioned in the 1991 report—increased opportunities for research by all undergraduates, and enhanced literacy across the extraordinarily wide range of language abilities represented on our diverse campus. We are proud of our success according to these latter two criteria for greatness, and we chose them as special themes for this review (see Chapters Three and Four).

Unfortunately, we cannot claim such success in our efforts to increase the diversity of our faculty. The report describes modest increases among women and other underrepresented groups on our faculty and staff, but it rightly describes these gains as "too small and too slow." Compounding our frustration at these disappointing results of our efforts, legislative actions by our State and resolutions by The Regents of the University of California have now made it illegal to use race and ethnicity as criteria for consideration in making new appointments. That restriction has further undermined our efforts in this area over the past few years and has made it even more difficult to imagine more effective strategies. Along with the entire UC system, however, UCI is exploring new avenues for enhancing diversity of all sorts on our campus. The Executive Vice Chancellor and the Assistant Executive Vice Chancellor for Equal Opportunity and Diversity have redoubled efforts on this front recently, and we hope to establish more effective incentives to make increasing our diversity a top priority for planning and recruitment in all parts of our campus. In addition, data regarding this factor will be available to the Academic Planning Group when it considers the allocation of FTE this year, so this objective will influence the distribution of FTE from the beginning of the campuswide planning process, rather than just at the stage of recruiting within the various departments and offices.

## **ASSESSMENT**

As explained in this self-study (Chapter Two, p. 38), there are two principal sources of data collection and analysis for the campus: the Office of Analytical Studies and Information Management, and the Division of Undergraduate Education. Staff from these offices regularly provide data to the central administration and to individual units in support of planning at all levels. Those reports include information about admissions, retention, and graduation, as well as more general data regarding the demographics of our campus, past trends in enrollment, and statistical projections into the future. These data help ensure a close connection between the academic plans of our units and a reasonably specific and concrete sense of who our students are and what their careers at UCI actually look like in terms of course selection for majors, minors, and electives. They also help us ensure that our requirements and expectations are compatible with more general objectives regarding retention and time-to-degree.

The quality of our academic programs and plans is assessed on a regular schedule using external reviewers who are specialists in the fields under review. Graduate and undergraduate reviews had been conducted separately until recently. Now, however, they are combined, in an effort to gain a more comprehensive perspective on all of the academic programs offered within a unit. The quality of teaching is also assessed on a quarterly basis through student evaluations and at times through direct observation in the classroom. These evaluations are reviewed by the units and forwarded as part of the dossier in personnel reviews to support evaluations of individual instructors, and they are used to determine the success of separate courses and course sequences. In addition to use by the campus and by our academic units, some of the results of these evaluations are published and

distributed to students in *TEACH*, the *Teacher Evaluation and Course Handbook*. The campus also offers a series of teaching awards that contribute to the assessment of successful teaching on the campus, though on a narrower basis focused on exceptional performance.

The performance of students is assessed regularly through various means, most obviously grades, which are reviewed in periodic degree checks by academic counselors in the units and by faculty advisors assigned to the students in most majors. In addition, there are other forms of regular assessment of specific skills, such as the Subject A examination of writing, and there are other special assessments conducted in association with other topics, as described in Chapter Two. In particular, some units administer alumni/ae surveys that focus on placement of graduates and their degree of satisfaction with their UCI education, and other units and programs solicit that information less systematically through more general communication with alumni/ae. The UCI Career Center conducted a campuswide survey regarding post-graduate education and employment of our alumni/ae in 1993-94, but no survey of that scope had been conducted since then until this year when the Center launched an annual on-line, Web-based survey to solicit data from the Class 2000 graduates. The *UC Irvine Graduating Students Survey 2000*, now in progress will be completed at the conclusion of fall quarter 2000.

Clearly we need to know more about what happens to our graduates campuswide, and to conduct those surveys on as regular a schedule as possible. We also need to centralize more of the assessment conducted on our campus in order to make better use of information that is now too often fragmented or narrowly focused on a specific issue and that is often restricted to a single unit or office. Chapter Two

makes the recommendations listed below to improve assessment on our campus and to enhance the effect of assessment on academic planning:

- Consider forming a campuswide taskforce or committee to continue the discussion regarding assessment of undergraduate education
- Consider conducting regular, periodic surveys of entering, continuing and graduating students
- Consider disseminating results of effective practices more widely

These recommendations would effectively shift the role of assessment on our campus. Presently, assessment most often serves as support for specific programmatic planning and evaluation, and as a source of information about our students. Assessment is thoroughly integrated into the academic planning of separate units, and it informs central administrative decisions directed toward specific objectives. If these recommendations are followed, assessment would continue to serve those functions, but it would occupy a more central role in planning on the campus by establishing a more systematic and continuous statistical perspective on our students and the effect of their education on their lives from matriculation to long after graduation. Some groundwork has already been laid for a movement in that direction, as noted in Chapter Two: The Division of Undergraduate Education has recently created a campuswide student database and the Office of Analytical Studies and Information Management is thoroughly integrated into all review processes (as exemplified by the data supporting this report on the Web). Further systematic assessment on our campus would provide a statistical perspective on our students and programs that is even more comprehensive and useful than our present one. It would also ensure greater continuity between localized and centralized planning on the campus, and it

would improve the connection between our pedagogical aims and the intellectual, artistic, and scientific objectives associated with our research.

## **UNDERGRADUATE RESEARCH**

As a major research university, UCI makes research central to the intellectual life of all our faculty and students. Most faculty teaching is directly inspired by the faculty's research and scholarship, and most courses provide students at least some engagement with the products of that research by way of textbooks, articles and monographs, and, of course, interaction with the faculty themselves. As Chapter Three indicates, about two-thirds of the courses at UCI provide students with the opportunity to conduct research, either in partnership with faculty or independently (Table 2). Furthermore, a survey in 1994-95 found that most students at UCI take at least six to nine units of independent study (i.e., at least two to three courses) in which they conduct research under the personal supervision of their faculty mentor (Table 1).

In addition to course work devoted to research, there are at least eight separate programs at UCI devoted to encouraging research among our undergraduates (pp. 79-80). These programs receive funding from the UC system and from our campus; that funding has averaged over \$100,000 per year since 1993-94, the year we launched our Undergraduate Research Opportunities Program. Results of these programs are impressive and fill not only the pages of a substantial *UCI Undergraduate Research Journal* each year but also a day-long symposium where the results of students' research are presented to a wide audience.

In addition to these campuswide efforts to support individual research, all of the academic units at UCI sponsor more specialized research programs, including

specialized projects, honors seminars, capstone courses, etc. (pp. 83-91). There are also campuswide programs that require research of all their students—most notably, the Campuswide Honors Program—and since the last WASC review there have been several other programs designed to reinforce the use of research or "problem-based learning" (PBL) in the classroom, including on-going support services by our Instructional Resource Center; the Hewlett PBL Faculty Institute; and the NSF Science, Mathematics, Engineering and Technology Education Project (SMET). At the lower division, two lower-division courses in particular have integrated research thoroughly into curricula that satisfy breadth requirements and (between the two courses) enroll all first-year students: Writing 39A-B-C, the sequence that satisfies the lower-division writing requirement; and the Humanities Core Course, which satisfies the requirements both for lower-division writing and for the Humanities breadth requirement. Writing 39A-B-C, which is required of all first-year students not in the Core Course, is dedicated to teaching the research paper, and research has gained an especially prominent place as well in the Humanities Core Course over the past two years. The Core Course now requires a research paper for all of its 1,000-plus students in spring quarter. In support of that assignment, it has instituted a year-long series of exercises and assignments designed to teach research methods in the humanities, and in all quarters it incorporates a Web-based instructional program that significantly extends the range of material available to its students in lectures and outside the classroom.

These various activities make research an integral part of our students' education, from introductory courses in their first year at UCI to the independent, individualized projects that often serve as a capstone of their academic experience here. We are proud of our success at providing our students the opportunity to do genuine research throughout their careers at UCI, and we are impressed by the

degree to which many of them exceed even our highest expectations. Our participation in the Hewlett PBL Project and the NSF-SMET Project further enhanced the research experience of our students by assisting faculty interested in developing this aspect of their courses. To maintain this emphasis on research in undergraduate education, we must be careful to maintain (at least) our present student/faculty ratio during the projected growth of the next decade, to continue our efforts to keep most of our courses small enough to encourage problem-based learning, and to continue supporting extra-curricular opportunities for more students through our campuswide research programs.

#### **COMMUNICATION SKILLS**

The extraordinary diversity of our students creates unusual challenges in the development of their communication skills. Chapter Four describes this situation in detail: our students' mean SAT Verbal scores usually rank second from the bottom of all UC campuses; we have the highest number of freshmen in the UC system who have failed to satisfy the Subject A requirement; 59 percent of the undergraduate students who entered in UCI in 1999 indicated that English was not their primary language; and 13 percent of our students must take English-as-a-second-language courses before they can enter our first-year composition courses. Nevertheless, despite the fact that these students have further to go than do many UC students toward reaching fluency in writing and even spoken English, UCI has some of the most ambitious requirements in composition of any UC campus: students who have not fulfilled Subject A must take an entire year of freshman composition (Writing 39A-B-C), and those who have passed that requirement must take two quarters. Students meeting our composition requirement through the Humanities Core Course must take three quarters of Core, regardless of their Subject A status. All students, including transfers who have otherwise fulfilled

our breadth requirements elsewhere, must fulfill one quarter of upper-division writing on our campus. A campuswide Writing Board oversees activity in this field at all levels, and a newly-created Lower Division Writing Committee handles the administrative issues at that level.

This contrast between the relatively low level of English-language skills among our incoming students and the high expectations of the campus that are reflected in these substantial requirements, has been a point of discussion for many years. The contrast was behind the unsuccessful effort to establish a "Gateway" examination of writing skills for our students. It also was noted by the two recent external reviews of our writing programs, one of which focused on lower-division courses and the other on upper-division courses offered by departments across the campus. Reviewers generally complimented our composition programs, but they pointed out several weaknesses, including (1) the lack of consistency in requiring and teaching "Standard Written English" in all courses; (2) the inadequate coordination among the various composition courses meeting the requirement; and (3) uneven development of upper-division writing across the campus-as-a-whole. (These reviews and our responses to them will be available in the WASC workroom during the reviewers' visit.)

As a result of those reviews and of discussions with experts on our campus, the Gateway Exam was abandoned as unworkable. Some curricular revisions were made which addressed more specific complaints made by the writing program reviewers, especially the observations that the Humanities Core Course did not pay enough attention to writing, and that the Writing 39A-B-C sequence lacked a clear sense of coherence and purpose across all three quarters. To address some of the broader structural issues raised by the writing reviews, a Writing Workgroup was convened in 1999 and headed by the Dean of the Division of Undergraduate

Education. The most dramatic result of that group's work has been the recent approval of a senior-level position in composition, the "Campus Writing Coordinator," to be filled by a scholar whose research agenda will be accompanied by significant administrative responsibilities and authority in the area of composition on our campus. This search is currently in process. (In addition to this senior-level position, several years ago the Department of English and Comparative Literature devoted a tenure-track, junior-level FTE to this field. The position has recently been vacated, but the line remains open and will be filled again in the near future.) In addition, our Learning and Academic Resource Center (LARC) plans to hire a specialist in oral communication to work with students through that office.

In choosing "Communication Skills" as one of the themes for review, we intended to highlight an area in which UCI faces unusual difficulties and to which we have devoted a great deal of time and attention in the past decade. The situation described in Chapter Four represents our continuing determination to deal with this apparently intractable problem, and that chapter is honest in its assessment of the mixed results that have stemmed from our earlier efforts. We believe that responses to the two external reviews have been quite effective in solving some specific problems associated with our composition courses, however, and the prospective appointment of a senior scholar in this field should focus the general goodwill of our faculty toward this objective and catalyze the energies of faculty and graduate students interested in teaching and research in this field.

## **CHALLENGES**

The principal foreseeable challenge facing UCI in the next decade is the rapid growth projected for our campus, as described in Chapter Five. We are projected

to grow over the next 10 years by about 10,000 students, to a total enrollment of 27,600. At least 15 percent of those students are projected to be graduate students, and our projected increase in faculty FTE over that time is 550. Senate and administrative groups are planning ways to accommodate that growth in a manner that enhances the academic mission of the University by increasing the size of many existing programs where possible and appropriate, and by developing new programs and professional schools. Chapter Five describes specific plans for units across the campus, including an effort to balance our academic mission with the interests of incoming students, with the demands of the marketplace for employees with particular kinds of training, and with our capacity to appoint enough highly qualified faculty to meet teaching needs in various areas. We are also considering less predictable factors such as the migration of students from one major to another during their careers at UCI, the admission of an increasing contingent of "Undecided/Undeclared" students, the growth of the Campuswide Honors Program, and the vagaries of fashion among undergraduates for one field or another. In addition, we hope to manage our growth to increase the quality of our undergraduates and to achieve greater diversity among some underrepresented groups on campus. Coordinated efforts are underway to increase the number of transfer students, to make better use of our Summer Session, and to cope with our perennial lack of adequate parking and student housing facilities.

Our greatest general challenge during this period undoubtedly will be planning to use the projected growth as an opportunity to realize our academic objectives, rather than to be in a situation of having to respond to the sheer pressure of enrollment. It is imperative that UCI provides enough support for graduate students so that we can seek out and recruit the best candidates for our graduate programs, and so that we can offer adequate salaries and training to make these graduate students effective assistants in our undergraduate courses. The

management of undergraduate enrollment will also require careful attention to the development and clear articulation of majors and minors that are academically strong, and that reflect students' interests while responding to the needs of industry and commerce.