

## Essay 4: Ensuring Institutional Capacity and Effectiveness in the Future, and Planning for the Changing Environment for Higher Education

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*We find ourselves at a defining moment in the history of UC Davis. While the campus is at the pinnacle of its success as an institution, with the highest research funding in its history, the highest rankings as a public university that it has ever achieved, and in the final stages of the largest capital campaign it has ever undertaken, it nonetheless faces perhaps the greatest challenge in its history due to the unprecedented and precipitous reductions in state support that have occurred in the last few years.*

### Joint Report of the 2020 Task Forces

The 2020 Initiative task forces stimulated a comprehensive consideration of almost every aspect of the university's operation, as this joint administrative and Academic Senate effort tried to anticipate the impact of growth on the financial, personnel, physical, technological and academic needs of the campus. The sections of this essay provide evidence of attention to institutional capacity and effectiveness in each of these areas, in addition to explanations of strategic planning at all levels of the university.

### Financial Sustainability [CFR 1.3, 1.8, 3.5]

UC Davis's [budget](#) of approximately \$3.6 billion includes a critical \$703 million in state and tuition funds that provides the primary source of funding for instruction and academic support. State funds allocated to the campus by the University of California system are reflected in the UC system consolidated [audited financial reports](#), which, along with the [UC Davis's financial reports for 2000-11](#), are publicly available online. (A WASC Financial Review Committee panel reviewed our financial information and concluded in a letter dated November 20, 2012, that the data could not be evaluated independently. See [Ex. 53](#).) In recent years, the campus budget process has necessarily focused on addressing substantial reductions in state support (i.e., reductions of about 40% over five years). As outlined below, the campus has undertaken several strategic initiatives to ensure financial sustainability.

### Strategic Initiatives Aimed at Ensuring Financial Stability [CFRs 1.3, 1.8, 3.5, 4.1, 4.2, 4.3]

Budget reductions have been assigned using a variety of strategic approaches. In 2011-12, the campus focused on a three-part, multi-year strategy to diversify revenues, increase efficiencies and decrease costs. The call letter for the 2013-14 budget process includes modest reinvestments in student success, even as the campus continues to address a structural gap in core state and tuition fund support. More information is available at the [Budget Planning](#) website.

The [2020 Initiative](#) offers a framework for multi-year budget planning. Detailed analysis and

modeling of various enrollment scenarios provide the campus leadership with revenue and expense estimates that will be paired with academic plans to inform faculty recruitment proposals and targeted investments to support growth (e.g., services for international students, advising, classrooms and other facilities, instructional support).

The campus has been successful at obtaining support from donations and sponsored research. The [Campaign for UC Davis](#) set an ambitious goal of raising \$1 billion from 100,000 donors, and as of February 2013, the campus has inspired the commitment of \$915 million from 98,095 donors. In addition, the Office of Research, reorganized in 2011 with a new Vice Chancellor and three new Associate Vice Chancellors, supported the campus in breaking previous records for sponsored research; in 2011-12, the campus attracted \$750 million, a gain of \$65 million, up 9.6% from the previous year.

**Incentive-based budget model:** In 2012-13, the campus implemented a new budget model to improve transparency, advance the goals identified in our [UC Davis: A Vision of Excellence](#), and encourage creativity. Resources are allocated to schools and colleges based on how the revenues are generated. For example, undergraduate tuition allocations are driven by instructional workload (student-credit hours and majors) and student completion (degrees awarded). The model gives deans a better ability to forecast budget impact of growth or changes to instructional programs. Overviews of the new budget model and white papers for various revenues and allocation summaries are [published](#) online. In this effort, the provost consults the Academic Senate through the Committee of Planning and Budget, and the deans consult the Faculty Executive Committees in their colleges and schools.

**Data-driven approaches:** In 2011, the campus implemented the provost's Dashboard, a tool that provides the campus users easy access to comparative trends about students, faculty and academic programs. There is an ongoing effort to incorporate data metrics into the annual budget process and faculty recruitment call. Further, the [Budget & Institutional Analysis](#) unit has a long-standing practice of preparing analyses and white papers to support the budget process and other resource decisions.

### **Strategic Planning at the University Level [CFRs 1.3, 3.8, 3.10, 4.1, 4.2, 4.3]**

The strategic planning at UC Davis for the last decade begins with "The UC Davis Vision: The Campus's Strategic Plan" ([Ex. 13](#)), which guided the course for the campus beginning in Fall 2003. The plan set forth the university's mission, vision, distinctions and strategies for achieving the three primary goals of learning, discovery and engagement. Annual progress reports with a complete set of metrics to assess success further defined the means by which the university strove to attain its aspirational objectives. This document allowed separate educational initiatives to be linked to an action agenda, and it communicated the university's commitment to institutional excellence to both internal and external audiences. In 2008, the plan reached its fifth year of implementation, a benchmark that together with the milestone of UC Davis's Centennial (2008-09), offered the campus an opportunity to take stock of its progress and refocus its vision for the next century.

In 2009-10, with many of the last plan's objectives met, the next vision was set under the leadership of a new Chancellor, Linda P.B. Katehi. The bold goals that it outlined would situate the campus

among the very best public research universities in the nation. To refine the vision and ensure its success, Chancellor Katehi invited feedback from all members of the campus community. The resulting document, our Vision of Excellence ([Ex. 14](#)), provides a framework for broad campus aspirations, and engenders the more specific academic directions that will be created by the university's academic and administrative units in the immediate future.

In her Fall 2011 [Convocation speech](#), the chancellor called attention to the new challenges facing the campus as a result of significant reductions in state support over the preceding years. These reductions, coming at an unprecedented rate, challenged the ability of the campus to achieve the aspirations put forward in the [Vision of Excellence](#). The chancellor launched the [2020 Initiative](#) as a proposal to support a sustainable financial future for the university while simultaneously achieving several of the goals put forward in the Vision of Excellence. Once again, a broadly consultative approach was used to examine and evaluate the strategies proposed by the Initiative's joint task force. Three task forces – Academic Resources, Enrollment Management, and Facilities Planning – each composed of faculty, staff and students – met over a period of sixteen months. The membership of these task forces, and a summary of their meetings, is available in [Joint Report of the 2020 Task Forces](#) (pp. 37-42). The task forces discussed and debated the ideas put forward, compiled and distributed a joint report, and engaged stakeholder groups on and off campus in a series of lively discussions of the ideas proposed. The Academic Senate recently transmitted its formal response ([Ex. 48](#)) to the above-mentioned Task Force report. A formal implementation plan, responsive to this and other inputs, will be published, updated and monitored (by both administration and the several committees of the Academic Senate) on an annual basis.

A major concern of the Joint Report of the 2020 Task Forces is that any plan adopted should increase the financial sustainability of the institution; there is no interest in growing for growth's sake. Almost every course of action proposed in the Vision of Excellence is contingent on sufficient financial resources, and the possibility of obtaining net additional revenue from the growth proposed in the 2020 Initiative is under discussion. However, it is equally important to ensure that the new students be fully supported in receiving an outstanding educational experience, and a significant proportion of the task force's efforts were directed at defining and estimating the cost of providing this support.

The premise of the 2020 Initiative is that through carefully managed growth, the campus can improve its financial situation while simultaneously accomplishing several important goals laid out in the Vision of Excellence, including internationalizing the university while sustaining access for California students, investing in new and innovative areas of research, and nurturing the economic vitality of the region. In its current state, the proposal foresees the gradual addition of approximately 5,000 students to the undergraduate population of the campus, with increases in the number of graduate students, staff and faculty and investments in the physical infrastructure of the campus. A majority of these students would be non-residents, bringing supplemental tuition that may provide revenue significantly beyond that necessary to support investments required for growth. UC Davis, with the largest physical footprint in the UC system, has a unique capacity to expand. During the 2020 process our campus community has discussed ways that expansion and revenue enhancements can occur, while preserving the access for California residents that is fundamental to our land-grant mission.

### **Strategic Planning at the Graduate and Professional Level: Graduate Task Force Report [CFRs 1.3, 3.8, 3.11, 4.1, 4.2, 4.3, 4.8]**

In 2011, a [Joint Administration/Academic Senate Special Task Force on Graduate Education at UC Davis](#) was appointed by the provost and the chair of the Academic Senate to provide a strategic vision for the future of graduate education at UC Davis. Specifically, the Task Force is “charged with conducting investigation, consultation, analysis, and deliberation in order to recommend ways to advance the excellence, contributions, and vitality of graduate education at UC Davis. Rather than being a standard review of either the existing Graduate Studies unit or our many graduate and professional degree programs, the charge of the Task Force is to engage in a visioning process that aims to articulate what we want graduate education at UC Davis to be or become as we approach 2020. The charge is to answer the question ‘what’ much more than ‘how.’”

Throughout 2011-12, the Task Force held numerous meetings, engaged in town hall discussions and invited experts from the graduate education community to campus to provide a national perspective. It submitted a [final report](#) at the end of Spring 2012. The Task Force made numerous specific recommendations that can be categorized into four broad thematic areas. The first is to “Commit to Graduate Education as a Strategic Priority.” The Task Force argued that graduate education be valued because it builds strength within a discipline and also capitalizes on the rich array of research collaborations at UC Davis, expanding the application of core knowledge to innovative partnerships. The second area is to “Enhance the Environment for Graduate Student Success as Integral to UC Davis Excellence,” which the Task Force believed would enable graduate students to achieve their highest potential through access to financial support, to opportunities for both scholastic mentorship and professional advisement on their career choices, and to social and professional networking in a vibrant graduate student and campus community. The Taskforce also considered the role of faculty in graduate education, citing the need for faculty to embrace the principle of mentorship as both a privilege and responsibility as key efforts of their third recommendation, to “Engage and Recognize Faculty Participation (in graduate education).” Finally, the Task Force advocated that the campus should honor the land grant principle of engaged scholarship and develop distinctive programs that “Value the Societal Relevance of Graduate Education at UC Davis.” Within each of these topical areas there are multiple ideas that define the broad vision for the future of graduate education at UC Davis, providing rich guidance for the campus to strengthen graduate education and to excel.

Going forward, an implementation advisory committee consisting of the Dean of Graduate Studies, other administrators and Graduate Council will soon be tasked with examining the response received from the campus to the Task Force report, and prioritize recommendations. Their advice on implementation will be presented to the provost and the Chair of the Academic Senate. The Dean of Graduate Studies and Graduate Council will work with Council of Deans and Vice-Chancellors (CoDVC), the Academic Senate, and constituent groups such as the Graduate Student Association to implement the most promising ideas that fall within their purviews.

### **Strategic Planning at the College-, School- and Division- Levels [CFRs 3.8, 3.11, 4.1, 4.2, 4.3]**

Planning also occurs regularly at the college level, a process that involves departments, faculty advisory and college executive committees, and, ultimately, deans. These deliberations produce final

plans that reflect the majority view of the college and are submitted to the provost. Academic plans most often cover five-year periods. The most current set of [academic plans for the colleges and schools at UC Davis](#) can be found online. While the college academic plans accurately summarize the intentions and aspirations of the individual colleges, the consolidation of these plans does not necessarily define the academic plan for the university as a whole.

Maintaining a broad portfolio of disciplines consistent with the teaching, research and service missions of the university is part of the process of making final decisions regarding implementation of each unit's academic plan. Although the colleges develop their strategic plans autonomously, their aspirations may exceed the resources available to the university; as a result the deans work collaboratively with the provost to consider the specific elements of each plan, the availability of resources, and the need to build on strong programs and strengthen weaker ones. This process culminates in the authorization by the provost on an annual basis of faculty searches in each college.

### **Sustaining Faculty and Staff: Hiring and Professional Development [CFRs 3.1, 3.2, 3.3, 3.4]**

Professional qualifications for the appointment of professors are defined for the UC system in the UC Academic Personnel Manual ([APM 220](#)); candidates for appointment, merit increase or promotion of professors include teaching, research and creative work, professional competence and activity, and university and public service. UC Davis is committed to employing a faculty sufficient in number, professional qualifications, and diversity to achieve its educational objectives, to establish and oversee academic policies, and to ensure the integrity and continuity of its academic programs wherever and however delivered.

The provost's annual [budget update letter](#) requests hiring proposals from the Deans. Each year, deans submit requests to the provost for the authorization to recruit for one or more positions, as appropriate given their academic plan. The requests may be for positions recently vacated (retirement, resignation) or for positions to be funded through growth. These requests are reviewed by the provost in consultation with senior staff to assure that the necessary resources are available and that the hires are aligned with campus priorities. Based on the needs of a particular unit and the overall campus, the provost communicates to the deans which positions they are authorized to recruit and provides expectations and some commitments for start-up costs.

The guidelines for the faculty hiring process are dynamic, and have been subject to recent revisions as the campus moves to a new budget model. The currently proposed process is described in a working document, [Incentive-Based Budget Model: Faculty Resources](#), posted on the campus budget office web site. Appendix III of the document describes in some detail the changing practices governing the faculty hiring process over recent years, through periods of growth and contraction. Once authorization for a search has been given, the search process proceeds according to UC Davis and UC systemwide [policies and procedures](#).

In 2011-12, 59 new faculty members joined the ladder ranks, bringing the total to 1,477, a figure below the ten-year average but showing an increase from the low point in 2009-10. [Statistics for ladder faculty hiring](#) are published online. (For additional statistics on faculty at UC Davis, see [Ex. 4.1 – 4.3.](#)) [APM 500 – Recruitment](#) and [UCD 500 – Academic Recruitment Guidelines](#) outline UC Davis's

commitment to recruiting a diverse and qualified faculty. In keeping with the goals and values articulated in the systemwide [Statement on Diversity](#) and the UC Davis [Principles of Community](#), UC Davis seeks to achieve diversity among its employees. UC Davis's [Affirmative Action Plan](#), which outlines the hiring goals and related programs for the campus and provides data on hires for the previous year, is updated annually.

New faculty are offered orientation and continuing professional development opportunities through workshops provided by the Office of the Vice Provost – Academic Affairs (VPAA). In this process it is made clear that academic policies are established and overseen by the Academic Senate, according to the principle of [Shared Governance](#) cited in Essay 1. The faculty authority, duties, powers and privilege are outlined in the [Standing Orders of the Regents, 105.2](#). Both a day-long [New Faculty Workshop](#) and a monthly [brown bag series](#) are held. For newly appointed department chairs, a mandatory two-day [New Chairs Workshop](#) offers information, policies, and resources, including sessions designed to assist in the understanding of the faculty review process and in mentoring newly appointed and junior faculty. VPAA also provides a series [of monthly brown bag sessions for chairs](#) and a [handbook for department chairs and program directors](#). Merit and promotion processes for faculty and teaching staff are designed to review individuals in areas of teaching, research and service. Teaching is reviewed in person by chairs or colleagues and by survey through student evaluations (these are part of the [APM 220](#) process). The Academic Senate outlines the voting procedures for advancement actions of Senate faculty through their bylaws, specifically, [Bylaw 55](#).

UC Davis employs a number of non-tenure track teaching faculty. Lecturers with security of employment (SOE) are members of the Academic Senate, and [Lecturers](#) are members of the [Academic Federation](#). The UC Davis Academic Federation consists of about 1,200 academic appointees at UC Davis who hold appointments in one or more of the designated academic title series, as listed in [APM 220AF](#), and who are not members of the Academic Senate. The Academic Federation, unique to UC Davis, plays an important role in the educational mission of the campus by allowing its members shared governance on the campus through participation on committees. While Academic Federation members are not eligible for SOE they may earn permanency. Federation members undergo review, according to processes listed in APM 220. While Unit 18 lecturers are considered members of the Academic Federation, their collective bargaining agreement governs all aspects of their employment.

To help staff at all levels from orientation to professional advancement and to retirement, UC Davis Human Resources offers a number of opportunities for [staff training and development](#). Staff are included in decision making through participation in Administrative Advisory Committees, Town Halls, and recruitment panels, and in addition to the Academic Federation, [Staff Assembly](#) provides a collective voice.

### Accommodating Growth [CFRs 1.2, 1.3, 1.8, 3.1, 3.2, 3.5, 4.2, 4.3]

*Significant growth in the number of students will present immediate challenges, but each of these is likewise an opportunity...*

[Joint Report of the 2020 Task Forces](#)

### Physical Planning [CFRs 3.5, 3.6, 4.1, 4.2, 4.3]

A significant growth in enrollment would create a need for more instructional and residential space for students. UC Davis's 5,300 acre campus could allow room for expanding the university, and that expansion offers a possibility to be innovative. As the Joint Report of the 2020 Task Forces notes, "the need to add instructional space provides a rare opportunity to build classrooms that fit the demands of the pedagogy of the 21st century."

The [Administrative and Resource Management \(ARM\) annual report](#) offers a short-term picture for physical planning, and the [2003 Long Range Development Plan](#) (LRDP) articulates goals, principles and objectives for land-use planning for the Davis campus through 2015-2016, including plans for conversion of [Teaching and Research Fields](#) for other uses. The LRDP is guided by the goals of creating supportive, connected, and sustainable places that enhance student success. These goals are further developed in the [UC Davis Physical Design Framework](#) (2008-09), which describes a vision for creating a physical environment at UC Davis that supports the academic mission and enhances personal and environmental health. This framework establishes criteria that the campus uses to judge the success of proposed projects with regard to planning and design, and is used regularly by campus planners, architects and others to guide the effective incorporation of these goals into all projects that modify the built environment. For example, the goal to "Create Connected Places" contributes to campus community (and thus supports student success) by incorporating "Meaning" and "Delight" alongside "Flexibility," "Interactivity, and "Wise Resource Use."

UC Davis has undergone a number of capital improvements over the last ten years, including research laboratories, classrooms, instruction and research facilities, student housing, and other student support facilities, variously funded by gifts, student-elected fees, and state and campus funds ([Ex. 9](#)). Current plans include the expansion of housing for students, faculty and staff in West Village; several [Student Affairs capital projects](#) which enhance student life; the Jan and Maria Manetti Shrem Museum of Art, funded in part by a \$10 million gift, which will provide approximately 40,000 square feet of contemporary space for galleries, seminars, research and public gatherings, and house the university's fine arts collection. A 500-seat lecture hall is also slated to be built and available for use as early as 2015.

The University Library is an integral part of the University of California, Davis, and one of the top 100 research libraries in the United States. Dramatic forces of change are affecting libraries today, along with every organization involved in the production, communication and receipt of knowledge. These forces include advances in technology that shift the ways scholars perform research and the locations in which research is performed. The Library, responding to these forces and campus growth has, under new leadership, begun to leverage new technology and develop innovative uses of its physical spaces. It has also created a [Strategic Plan](#) ([Ex. 49](#)), based upon input from students, faculty, and staff. Now being implemented, this plan commits the organization to be flexible, adaptive, and committed to continuous improvement through embedded assessment metrics.

### Sustainable 2<sup>nd</sup> Century

A commitment to economic, environmental, and social stability is a hallmark of UC Davis. In the

[Sustainable 2<sup>nd</sup> Century](#), our campus has challenged itself to question current operations — from landscape irrigation to laboratory work to heating and cooling — and re-envision a more sustainable campus, both environmentally and economically. Thus, our economic sustainability is part of a campus ethos of investing in solutions for building management, energy systems, climate, transportation, waste reduction, dining, and water and landscaping.

Our campus commitment to sustainability is an example of how UC Davis’s unified approach to teaching, research, and service can permeate disciplinary boundaries and reach across administrative, academic, and student-life compartments to address society’s (and the campus’s) most pressing problems. Sustainability research and teaching find expression throughout the colleges, in [engineering](#), [agriculture](#), the [sciences](#) and the [arts](#). It is manifest in the commitment to [LEED-certified construction for all new buildings](#); in our [zero-net-energy planned community](#) and in our [zero-waste student-run campus festivals](#); in laboratory experiments, campus [institutes](#), and dining hall practices. UC Davis’s 2012 recognition as the Sierra Club’s “[#1 Cool School](#)” was the combined result of research and teaching, campus planning and stewardship, [staff-](#) and [student-run](#) initiatives, [teams](#), and day-to-day service commitments.

### Supporting International Students [CFRs 1.5, 2.13, 4.1, 4.2, 4.3]

An issue of particular concern to the 2020 task forces was the ability of the campus to recruit and enroll international students and to support them adequately after their matriculation at the university. Significantly increased resources must be invested in recruitment to develop a pool of international students that will be successful and fit well in our academic community, with its high academic standards. Moreover, greatly increased attention must be focused on support for reading, writing, speaking and oral comprehension of English for students in need of such assistance. In contemplating the pressures on academic support services resulting from growth in student number, it was also determined by the task forces that there was a need for substantial investment in advising support for all students. (Plans to improve advising are discussed further in the Integrative Essay.)

The challenges involved in implementing the 2020 Initiative are already apparent. Enrollments of undergraduate California residents at UC Davis have increased from 6,901 (4,368 freshmen and 2,533 transfer) in 2010, to 7,451 (4,839 freshmen and 2,612 transfer) in 2012. Over the same period, we have significantly increased our international undergraduate population, though still small in both absolute numbers and a percentage of the whole, moving from 381 to 665 students a year. This rapid growth in undergraduate enrollment was in part a result of new and robust yield efforts with respect to admissions that succeeded beyond expectations. The admissions policies and enrollment strategies with which the Office of Admissions operates are being examined and refined so as to ensure that we are admitting and enrolling academically qualified students. Although this is challenging because of our lack of relevant historical data concerning yield rates for large international applicant pools, as well as some uncertainty, both systemwide and at UC Davis, about how to compare academic records from many different countries, data concerning the most recent admissions cycle show that national and international admitted students are comparable to California residents in terms of academic qualifications ([Ex. 43](#)).

This international enrollment growth, while within the capacity of our institution, has provided the

campus with additional motivation to begin addressing problem areas, including efficient mechanisms for registration, demand prediction, and ultimately providing sufficient seats, especially in crucial GE courses and lab courses in the introductory science series.

### **English as a Second Language (ESL) Support [CFRs 2.13, 4.1, 4.2, 4.3]**

Support for international students involves planning the enhancement of ESL services, which will serve our heritage or generation 1.5 ESL students (defined as those who grew up with at least one non-native English speaking parent) as well. Increasing international student enrollments creates extraordinary opportunities; at the same time many of these talented students come from language, cultural, and educational backgrounds significantly different from the United States. Related to the proposal for increasing the number of international students as part of campus growth, international graduate students would benefit from more integrated services, just as undergraduates would. International graduate students may need more- or more intensive- advising, dissertation mentoring, academic language development support or other services than do domestic graduate students. Providing these services is essential for their success as independent researchers and as teachers. Our challenge is to mobilize our campus resources and strengths to support all international students in our learning community to ensure their success. Critical to this strategy is building on existing campus capabilities and creating partnerships to give students the tools they need to succeed. While our attention is currently on enhancing international-student ESL services, we are aware that our heritage students also need attention in the ESL program to ensure that they are receiving effective writing instruction. It is our intention to improve ESL for both populations within the next year.

We have the institutional capacity to help international and heritage ESL students reach their goals, via the Student Academic Success Center, Undergraduate Admissions, the Center for Excellence in Teaching and Learning, Summer Sessions, the Departments of Linguistics and the University Writing Program. Also involved are UC Davis Extension, University Outreach and International Programs, and Services for International Students and Scholars. Currently faculty and staff across several of these programs are collaborating to enhance offerings for international undergraduate ESL support in 2013-14. These include adding a voluntary summer six-week orientation to help students adjust socially and academically, an increased emphasis on speaking and listening in their ESL coursework, and creating intentionally blended classroom environments that enable international and non-international students to challenge and learn from each other. We also plan to assess the effectiveness of our writing support for heritage ESL students.

### **Enrollment Management [CFRs 1.7, 1.8, 2.4, 2.12, 2.13, 4.4]**

#### *Availability of Gateway Courses*

Early in 2010, concern that recent budget cuts had led to a decrease in course availability prompted the VPUE office to monitor course enrollments at key points in the registration process. The study indicated that while the budget cuts had not led to a decrease in seats offered, there was a continuing problem with course availability that needed to be addressed. The analysis confirmed what many had known anecdotally: many classes were full and had long waitlists each term. The course availability study was repeated each quarter, collecting data on planned course offerings and course enrollments

and waitlists during the registration process.

This led to the identification of a group of courses referred to as critical “gateways” to student success: primarily freshman-level prerequisites to major requirements, such as first courses in biological sciences, chemistry, mathematics and physics. Upper division writing courses, required of most students, were also included. Using the enrollment information, the VPUE office worked with the colleges to investigate ways to meet student demand. Supplemental instructional funding was provided where needed to hire additional lecturers and teaching assistants. While these efforts improved course availability, they did not fully resolve the problems.

While we have made progress, the limited number of seats available in large lecture and limitations on laboratory sections (discussed below in the Chemistry 2 example), especially for gateway courses, challenges campus aspirations to increase and internationalize our undergraduate student community and ensure that students make timely progress through their coursework. New investments and creative thinking are required to ensure that sufficient sections of these courses are available. A high-priority investment of campus capital resources will make a new 500-seat lecture hall available for use as early as 2015. There are several short-term measures underway to meet the challenge of the intervening years. First, the campus will prioritize existing large lecture halls for use by heavily impacted large lower division courses that are required for students to advance in their majors (for example, freshman chemistry, calculus, and biological sciences). To do this the VPUE is leading an initiative that will enable the Registrar’s timely prediction of enrollment in these courses; set aside sufficient seats early enough to avoid the need to add sections at the last minute; provide better information to maintain confidence of students, parents and major advisers during the multi-pass seat release process; and provide short-term financial incentives to encourage academic departments to err on the side of offering too many sections, rather than too few. The provost is resolved to make sure that students face no barriers, in the college of their major or in another college, on their path to the timely completion of their academic program.

Second, the campus will have to be more creative in its use of unconventional classroom space and use of conventional space at unconventional times. For example, it is possible that concentrated Monday through Wednesday use of a large hall normally dedicated to use for student activities will meet the needs of the freshman biological science sequence, thereby freeing space in the conventional large lecture halls for chemistry and mathematics. Third, the campus is also making more aggressive use of the summer quarter. Finally, in partnership with the Academic Senate, the Registrar is shortening classroom maintenance and equipment replacement cycles so that the larger rooms in particular will not only withstand heavier use, but continue to be inviting venues for faculty and students alike.

Case Study: Chemistry 2 Series

A persistent challenge for us has been chronic waitlists for the introductory chemistry series, CHE2 A, B and C. CHE2 is a very large enrollment course with both lecture and lab that primarily serves first year science students in all four colleges (COE, CBS, CAES and CLS). The course is a prerequisite for subsequent courses in all of the colleges; thus, having to defer the course for even one quarter results in a high level of student anxiety, and in some cases extends time-to-degree. In recent years, the situation has become increasingly problematic, as budget challenges exacerbated an already conservative allotment of resources to mount additional course sections. The increasing student numbers have exceeded capacity for the laboratory part of the course, and students from majors that do not require chemistry have enrolled in the course in increasing numbers.

In the past year, we have initiated a multifaceted approach to resolving this issue. It was determined that both physical plant issues (lab infrastructure capacity) and personnel issues (potential lab periods unused due to academic scheduling conflicts and staffing issues) were reducing course capacity. We took immediate steps, in cooperation with the Chemistry department and MPS deans' office, to remedy these issues. Our objective is to accommodate all students who need the course in coming quarters, and we have established a new standard operating approach that should prevent recurrence of the problem. We are now addressing remaining waitlist issues for required prerequisite courses through direct but collaborative interactions between the VPUE, college deans and department chairs.

*Enforcing Prerequisites and Eliminating the Enrolled No Work Submitted [ENWS] Grade*

The campus is taking other steps to improve enrollment problems, including encouraging the enforcement of prerequisites and eliminating the ENWS grade. Students who take a course without having the prerequisites can struggle academically; many who struggle opt to take an "F" so they can retake the course. This can cause a seat to be taken twice, adding to problems of impaction. Although waiving of a published course prerequisite is always the prerogative of the instructor of record, discussions have begun across the colleges to enforce course prerequisites systematically and with the aid of the Registrar. Currently, students are being asked to drop courses for which they have not met published prerequisites, and they may in fact be disenrolled by the instructor. For example, in Fall 2012 the College of Engineering sent an e-mail to all their undergraduates linking to current prerequisites and instructing students to ensure that they have successfully completed the published requirements. The Academic Senate and administration are committed to making it easier for departments to enforce prerequisites, if they choose.

The Enrolled-No Work Submitted (ENWS) grade designation posed similar enrollment challenges. To remedy the situation, in June 2012, the Davis Division of the Academic Senate approved an amendment to their Regulation A540, governing campus grading policies, which eliminated this

grade designation. Effective beginning in 2012-13, the amendment stipulates that students who submit no work subject to grading for a given course must be assigned a failing grade rather than the previously endorsed ENWS. The elimination of the ENWS designation was motivated primarily by concerns about protecting the integrity of Academic Senate grading policies. Approximately 900 students per quarter were receiving the ENWS designation rather than an evaluative letter grade. Many of those students' academic performances would more appropriately have been evaluated as either failing (F), in the case of those students who submitted no work but had no extenuating circumstances surrounding that failure; or as incomplete (I), the grade designation for those students who have been submitting course work earning a passing grade until some point at which extenuating circumstances render them unable to complete any remaining course work before the end of the academic quarter. Concurrent with the elimination of ENWS, a provision was added to Regulation A540 which allows students to petition the Grade Change Committee for removal of the grade in the very rare cases in which neither an "F" nor an "I" is appropriate, but in which failure to complete any course work is due to circumstances beyond the student's control. The elimination of ENWS also carries some implications for course availability and therefore time-to-degree. Because students can no longer count on an ENWS as a fail-safe mechanism, they must be more careful about enrolling in courses for which they are not likely to complete the work, and about adhering to drop deadlines—both of which leave some of those approximately 900 seats per quarter open to students more likely to complete the course satisfactorily.

### **STEM students, disciplinary balance, and the iAMSTEM HUB [CFRs 2.4, 2.10, 4.3, 4.4]**

A key academic issue discussed in the 2020 Initiative is the balance between enrollment of students in the STEM disciplines and enrollment of students in the social sciences and humanities. Given the dramatic differences in the cost of hiring and providing research space for STEM faculty as opposed to other faculty, this balance has major impacts on financial sustainability. The Davis campus is relatively science-intensive compared to most of its sister campuses in the UC system, which presents specific budgetary challenges; alignment of the campus' research priorities with the resources available remains a critical issue. Addressing this challenge may be complicated if the academic preferences of the growing population of incoming national and international students is biased towards STEM disciplines.

Better understanding the circumstances that drive student attrition in STEM majors is one aspect of dealing with the disciplinary balance. The [interdisciplinary Agriculture Medicine Science Technology Engineering and Mathematics Hub](#) (iAMSTEM Hub), a university-wide STEM education effort, works across relevant disciplines to analyze and improve undergraduate STEM student success. Established by the provost in 2012, the iAMSTEM Hub has developed analytical tools that treat emerging and historical student data (dating back 12 years) in new ways, enabling a data-driven, student-centered approach to examining the causes of STEM attrition at UC Davis. In 2012, selected faculty members have taken the opportunity to use the preliminary data and analysis tools available through iAMSTEM. These tools will enhance the ability of faculty to assess courses and programs in meaningful ways.

### Educational Technology [CFRs 3.7, 4.1, 4.2, 4.3]

UC Davis makes technological investments in teaching to enhance classroom pedagogy, enable faculty to experiment with multiple tools and approaches, and enhance students' ability to graduate in a timely manner, while extending teaching to learners beyond campus. Technology-aided teaching can be a powerful tool to improve pedagogy by sharing core texts, materials, and knowledge in an engaging, accessible way. It may also reduce time-to-degree by allowing students to complete units during summer (from home), by offering incoming transfer students from community colleges another mechanism to meet UC Davis transfer requirements, or by making available impacted gateway courses. It may even enable students to complete preparatory work in between admission and matriculation so that they are better able to succeed when they begin coursework.

UC Davis is committed to developing a comprehensive plan for online investments and a set of principles that will allow us to determine if those investments ultimately are successful. Our goal is to prioritize, in this process, the enhanced education of UC Davis students through innovative pedagogy, even as we identify multiple "student" beneficiaries on and off campus. The campus has recently identified a task force comprising faculty, staff, and administrators that will meet to determine strategic investments in online and hybrid education. Until such a process is complete, our faculty will continue to innovate using tools provided by campus and available beyond campus.

The campus has come a long way since the 2003 WASC report, which urged attention to academic technology. Every classroom now is equipped with a projector, and many of the larger classrooms feature the ability to podcast. We are also running various lecture capture pilots in the hopes of having a campuswide lecture-capture system some day in the future. Many instructors use an array of tools provided by our own campus course management system, SmartSite, that features an electronic grade book, communication and collaboration tools, quizzing, and other enhancements. SmartSite undergoes constant reviews and was most recently [upgraded](#) in June 2012. [Workshops](#) for faculty and staff are ongoing, and Academic Technology Services (ATS) maintains an instructional technology blog, [The Wheel](#), which provides a wealth of information and resources related to educational technology. Faculty are also starting to experiment with online educational tools such as Piazza and VoiceThread.

#### *Online and Hybrid Courses; Participation in UCOE*

The Academic Senate's Committee on Courses of Instruction (COCI), which is committed to ensuring academic integrity, has taken a leadership role within UC to establish expedited methods of reviewing and approving courses taught with new pedagogies. This review, which is as rigorous as that imposed on other courses at UC Davis, allows the campus to continue to build infrastructure through hybrid course experiments and their assessment, such as the newly approved ENG 045Y, a hybrid Properties of Materials course just approved to be taught Summer 2013. COCI has given attention to options for proctoring examinations of online courses and [recently changed its policy](#) to allow students in online courses to take exams in proctored settings off campus, which has allowed some online UC Davis courses to be designated as systemwide courses.

Five UC Davis faculty are among the first cohort, systemwide, to create online courses through

University of California Online Education (UCOE), with the goal of offering these courses to UC Davis and UC students for credit. Thus far, three of these courses have been approved for instruction at a systemwide level, and are to be offered multiple times throughout the academic year. One of our primary reasons for participation in the system's UCOE initiative is to offer our students additional options, especially in high demand areas. This is one way we will improve our students' time-to-degree.

### *Support for Hybrid Course Development*

Many faculty blend in-class teaching with online instruction for distant participants (hybrid classes), and are often supported by campus awards, such as the [Provost Hybrid Course Award](#) (PHCA), which allow faculty to experiment with new pedagogies and assess what works to improve student learning. The PHCA provides funding for faculty to reimagine their current face-to-face course offerings as hybrid courses, utilizing video, interactive content, web 2.0 tools, and other "flipped classroom" techniques. ATS and the Center for Excellence in Teaching and Learning (CETL) offer a wide variety of faculty training and support programs, often collaboratively, to advance the use of online technology in teaching. Among these offerings is an eight-week seminar "Designing Hybrid Courses." ATS and UC Davis Extension have production and design resources used to develop video and media for online courses. In 2011, ATS hired an instructional designer devoted full-time to development of online and hybrid courses. In follow-up to the PHCA, CETL hosted an [Online and Hybrid Learning Showcase](#) in October 2012, which featured online and hybrid courses taught or being developed for the first time during 2011-12. [Videos](#) of the presentations are available online. CETL's workshop series on [Designing Courses for Hybrid Delivery](#), open to all faculty, addresses topics specific to hybrid delivery including adapting or creating content, assessing learning, academic integrity, quality assurance, and interaction. Development of hybrid courses extends well beyond those supported by the PHCA. [Discussing Online Learning and Collaborative Education](#) (DOLCE) sponsored by ATS meets monthly to engage faculty and staff in a discussion of online and collaborative teaching and learning strategies. At least one faculty member presents on an innovative teaching method, and ATS staff answer questions. Minutes and video recordings of each meeting are posted online.

### *MOOCs and E-Textbooks*

Massive Open Online Courses (MOOCs) have been very much in the news over the past year following Stanford's experiment opening three computer science courses to outside enrollment, which resulted in each course enrolling over 100,000 students. The provost invited a small group to begin inquiry into the question of whether UC Davis should experiment in this area. As part of their work, this group met with Sebastian Thrun, founder of Udacity and former Computer Science professor at Stanford, and also with Daphne Koller, co-founder of Coursera and Computer Science professor at Stanford. In addition, Koller made a presentation at UC Davis this past December that drew more than 100 faculty and staff. A few UC Davis faculty have begun working with MOOCs. John Owens, Associate Professor in Electrical and Computer Engineering, launched a MOOC through [Udacity](#). At the time of this report, the course is newly launched, and has over 15,000 students enrolled. Dr. Owens wrote a well-received [blog post](#) on preparing the course that was highlighted on the front page of [Medium](#), a popular online publishing and idea-sharing site. Arnold Bloom, Professor in Plant Science, has created a [self-paced MOOC on Global Climate Change](#) based on

the course he produced for UC Online.

UC Davis faculty are also exploring the creation and use of online textbooks. The Electrical and Computer Engineering (ECE) Graduate Seminar hosted Smita Baksh,<sup>i</sup> the CEO of online textbook company [Zyante](#) in December, 2012. The presentation discussed how interactive electronic textbooks can enhance interactive hybrid instruction and supersede the use of traditional texts in conventional deliveries. Computer Science faculty are early adopters to test interactive electronic textbooks in lower division classes. Faculty in ECE are collaborating to create online textbooks for gateway courses.

Online education can be used to achieve a wide range of objectives including increasing access, reducing the cost of education, and generating new revenue. While these goals are laudable, at UC Davis they remain secondary to the goals of improving teaching and student success. As UC Davis considers more online and hybrid teaching models, we will not lose sight of the essential teaching/learning partnership in higher education and the value of the small classroom environment.

### *Summer Sessions: Technology Enhanced Summer Classes*

Summer Sessions has provided resources to increase the use of technology in the classroom to expand access of summer courses to students and improve student success. In Summer 2012, Summer Sessions collaborated with the Department of Nutrition, ATS, and CETL to offer lectures via video lecture capture in NUT 10 (Concepts and Discoveries in Nutrition), one of the largest enrollment classes at UC Davis, reaching roughly 2000 students each academic year. Students had the choice to take the class fully face-to-face, as it has been offered for years, or to take part of the class virtually. Student satisfaction was high for both groups. Comments from the student survey and the student focus groups suggest that a main benefit of the two-option approach to NUT 10 lies in the flexibility that allows students to choose the learning setting in which they are most likely to succeed. Summer Sessions also collaborated with the Department of Chemical Engineering and Materials Science (CHMS), and UC Davis Extension to develop a hybrid version of ENG 45 (Properties of Materials), a course required for several Engineering undergraduate degrees. The Summer 2013 course will offer the lecture component online with students returning to campus to take the laboratory component. CETL plans to track and compare teaching and learning data.

### Ensuring Educational Effectiveness [CFRs 2.3, 2.4, 2.7, 3.3, 4.4, 4.5, 4.6]

UC Davis has longstanding practices of evaluating educational effectiveness through faculty merit and promotion cycles and formal undergraduate and graduate program review.

#### Merit Promotion Cycles

Each merit cycle (which occurs in most cases within three years or less) considers evidence of teaching effectiveness in deciding whether individual faculty are promoted in rank. In addition to the department-wide merit reviews, department chairs are expected to review student evaluations quarterly with their faculty. Faculty frequently receive feedback from colleagues on how to approach material and develop effective teaching styles. The CETL, which offers one-on-one mentorship,

video-taped teaching observations and analysis, and ongoing teaching effectiveness workshops, is an important resource (see [Ex. 30](#)).

### Strengthening Program Review

In Essay 1, we described a number of systems and procedures in place which support the effectiveness of our academic programs. Among these, undergraduate and graduate program review are longstanding, clearly defined campuswide processes governed by the Academic Senate (discussed further in the Integrative Essay). These processes are periodically reviewed for improvement.

#### *Undergraduate Instructional Program Review (UIPR)*

The UIPR process was revised in 2004 to include a section on the program's alignment with the campus educational objectives. The UGC is currently considering the best way to incorporate assessment of program learning outcomes (PLOs) – which have now been developed for [100% of programs](#) – into the program review process.

In recent years the Academic Senate has taken steps to ensure all undergraduate programs are on a standard seven-year review cycle and graduate programs are reviewed close to a seven year average. Beginning with our next review cluster, this spring, we are at this seven-year point without backlog. This represents a significant improvement over review intervals that reached to ten years and beyond in the past. This new timely process ensures that every seven years each undergraduate and graduate program undergoes a process of self-study, external evaluation, and senate and administrative review. Here student evaluations and interviews are crucial in determining the quality of courses and the appropriateness of resources for the teaching mission. The addition of external reviewers to undergraduate program review, currently being tested by two programs undergoing expedited review, will further strengthen the input program review provides on student learning. Lastly, UIPR is studying ways to reinforce “closing the loop” on recommendations.

#### *Graduate Program Review*

Graduate Council coordinates the program review of graduate programs. The graduate program review process is regularly reviewed and modified to enhance its efficiency and efficacy.

Effectively communicated and easily available degree requirements aid students in understanding the learning objectives for their programs and aid faculty in ongoing assessment of educational effectiveness at the Graduate Council and program levels. Although degree requirements are reviewed routinely as part of graduate program review by program faculty and Graduate Council, in the past few years Graduate Council determined that a campuswide updating and standardization was desirable. Over the past six years, all graduate programs were asked to review their degree requirements, revise them if desired, and prepare them in a standardized format for Graduate Council's review and approval. In cooperation with the Office of Graduate Studies, these degree requirements were then made available on the Graduate Studies website for all academic graduate programs.

The Graduate program review process includes review of program bylaws. Graduate program bylaws (published under each [graduate program of study](#)) are a means of articulating faculty responsibilities for student learning outcomes and educational effectiveness. Developing and reviewing bylaws provides graduate programs with an opportunity to self-evaluate their expectations and success at meeting these expectations, as well as defining these expectations for students and for faculty outside the program who contribute to the review process. Bylaws specify criteria for membership in the graduate program and articulate requirements for continued membership. Essentially, members are expected to contribute to educational effectiveness by facilitating students' achievement of program learning objectives through delivering the classroom curriculum, advising theses and dissertations, serving on qualifying and comprehensive examination committees, and other activities identified by programs. Programs are expected to periodically review their members and take corrective action in the event that a faculty member does not meet the requirements for continued membership.

### **Establishment of the Office of Academic Assessment [CFRs 3.1, 3.4, 4.5]**

In 2012, UC Davis created the Office of Academic Assessment (OAA). In the seven months since its establishment, the OAA staff has provided essential support to the WASC reaccreditation effort, particularly in collecting required and supplemental report evidence. To familiarize campus leadership with the office's resources, the director made several presentations to academic senate committees and deans' offices, and worked with several programs revising or establishing program learning outcomes (PLOs). In addition, the OAA has fielded additional requests from numerous programs inquiring about PLOs and assessment plans. Staff members have also collaborated with the CETL, providing a session on formative assessment in the graduate teaching assistant orientation and a workshop on formative assessment for Geology graduate students. As a result of coordination provided by the OAA, an informal cross-campus working group on assessment now meets monthly to share available assessment data and tools. Due in part to the creation of the new OAA, UC Davis has reached several important milestones that point to the continued development of a student-centered approach to improved teaching and learning (see [Ex. 24](#)).

### **Undergraduate Instructional Improvement Plan (UIIP) Grants [CFRs 2.4, 3.4, 4.6, 4.7, 4.8]**

UIIP grants support strategic campus needs by funding [developments in educational effectiveness](#), including redeveloping courses with an active learning component; and developing student learning outcomes and assessment plans for courses, curricula, and majors. (See [Ex. 31](#) for a list of past grants and examples of UIIP impact reports from grant recipients.) Assessment also takes place as a result of UIIP grants.

### Case Study: Modeling Educational Effectiveness

While campuswide developments toward educational effectiveness are taking place, advances are also occurring at the program level. New programs are uniquely positioned to leverage new technologies and build current best practices into their plans “from the ground up.” One of UC Davis’s newest undergraduate majors, [Sustainable Agriculture and Food Systems](#) (SAFS) admitted its first students in 2011. SAFS models a program in which current instructional design practices are implemented at its foundation. [Program learning outcomes](#) underlie a curriculum designed to help students gain a diversity of knowledge, skills and experiences using traditional and nontraditional teaching methods, including hands-on experiential learning techniques. A strong student internship program supports full attainment of the learning outcomes. A competency-based portfolio course and a capstone course with self-assessment on the development of competencies were created with support from a UIIP grant (See [Ex. 51](#).) The electronic portfolio system to be launched in March 2013 will allow students to customize learning goals from within the larger curricular framework, integrate continuing peer and faculty feedback about their progress toward achieving those goals, and manage the attainment of competencies across their coursework.

The SAFS program was selected in a competition for the development of digital “open badges” sponsored by Mozilla and the John D. and Catherine T. MacArthur Foundation, and highlighted in an [article in the Chronicle of Higher Education](#). Badges are described by the MacArthur Foundation as “validated indicators of accomplishment, skill, quality, or interest.” The badge system is based on the SAFS program’s core competencies, and is designed to organize evidence of both formal and informal learning from within traditional higher education and without. SAFS is just one of many campus programs improving instruction through innovative means.

The sections above have discussed the various ways UC Davis is planning to meet the financial challenges facing public universities; to meet the increased demand for access to post-secondary education; to meet the demands for accountability regarding student learning; and to incorporate new technology and new approaches to teaching and learning. The following essay focuses on the campus priorities that have emerged as a result of this report.