

California State University, Northridge
Academic Affairs

2014/15 PLANNING FORM

This form is intended to present the plans for the whole college. Please briefly describe the processes and actions that your college will undertake in 2014/15 and up to three years beyond that address the planning actions below and how these connect to Academic Affairs' priorities of **academic quality** (access, assessment, research, learning-centered, and ongoing programs), **student engagement** (advising, retention, graduation rates, student involvement in faculty research, and **shared values** (CSUN Planning Priorities, collaboration, IT Vision@2015, Campus Sustainability Plan, and revenue enhancement). Indicate how your plans include assessment.

Our planning is done in the context of overall university planning. In order to effectively integrate our planning efforts, please refer to the following:

- [CSUN Planning Priorities](#)
- [The Campus Sustainability Plan](#)
- [IT Vision@2015](#)

The planning document should be no longer than seven pages, using 12-pt Times new Roman font, including one page that reflects on the college's achievement of outcomes set in last year's plan.

Initial drafts are due by **November 1, 2013**; **final drafts** are due by **December 20, 2013**.

Please submit planning documents by uploading to myCSUNbox only. (Deans will be provided access to an Academic Affairs 2014/15 Planning folder in myCSUNbox.)

Planning Actions

1. Demonstrating Student Success (through access, advising, retention, graduation rates, student involvement in faculty research, and assessment)
2. Supporting New Faculty
3. Demonstrating Integrated Planning: Actions to Meet IT Vision@2015 and the Campus Sustainability Plan
4. Increasing Basic and Applied Research and Sponsored Programs
5. Increasing Revenue Generation
6. Creating and Maintaining Partnerships with the Community

COLLEGE/UNIT: Science and Mathematics

2014/15 PLANNING FORM

1. Demonstrating Student Success (through access, advising, retention, graduation rates, student involvement in faculty research, and assessment)

The College's SSC/EOP maintains an "open door" policy with close to 2,800 visits a year. In the last two years, SSC/EOP placed a focus on encouraging first time transfers (a population that historically has had problems transitioning to the University environment) to access academic advisement in addition to faculty advisement. SSC/EOP continues developing and participating in initiatives to increase student success and persistence: **1)** The Student Health Professionals Pre-Entry Program (SHP-PEP), a pipeline program that supports underrepresented and first-generation students pursuing a health profession, admits 25 first-time freshman and up to five first-time transfers each year. **2)** SSC/EOP partnered for the second year in a row with Building Connections for Success and enrolled 100 first time freshman into a Freshman Connection consisting of University 100 and Psychology 150. **3)** SSC/EOP, in partnership with the Math and Chemistry Departments, enrolled 28 first time freshman in cohorted sections of Math 102 and Chem 100. **4)** SSC/EOP is also part of the pilot program for the Education Advisory Board's Student Success Collaborative. SSC/EOP provides free tutoring in biology, math, chemistry and physics, with 1,000 appointments each year. A Campus Quality Fee award allowed for expansion of its tutoring services. Each January the SSC/EOP reviews the records of all second semester freshmen for academic status, appropriateness of class schedules, probation status, enrollment in incorrect courses, under-enrollment and to identify students not enrolled at all. Students are contacted individually by phone and/or e-mail for follow-up advising. Second semester workshops are being developed to provide students with additional support in understanding their major and to develop time management and study skills.

Six year graduation rates for CSM first time freshmen (FTF) have shown steady improvement, from 37% for students admitted in 2000 to 50% for students admitted in 2006. Physics and Astronomy showed the greatest improvement, from 20 to 64%. One year continuation rates for FTF have remained relatively steady at 87-88% for several years, which is among the highest for colleges at CSUN. However, there has been a steady decline in one year retention rates for new transfer students over the same six year period, from 92% to 79%. This perplexing decline appears to be primarily in the departments of Biology and Mathematics. CSM has recently taken major steps to further improve retention and graduation rates, including: **1)** Construction of a STEM Student Success Center in Live Oak Hall, which was completed summer, 2012. **2)** Addition of online tutorial support for students taking the Mathematics Placement Test, with the ability to now take the test online, and **3)** Addition of supplementary laboratories and the ability to identify students as fully prepared or conditionally prepared in the lower level math courses. Items **2)** and **3)** were initiated by an NSF-STEP grant and have been institutionalized for long term enhancement of student success, which is a nice illustration of the importance of external funding in supporting academic infrastructural changes leading to higher retention and graduation rates. Every year

the College has applied for, and received, Campus Quality Fee money (\$50,000 annually) to hire additional tutors.

A source of pride is involving undergraduate students in research. Science is a process of gaining factual knowledge about nature, and engaging students in that process is the most effective way for them to learn. Though costly, laboratories and field trips are essential. Many of the College's state and federal grants are for mentoring and include a significant student research component (e.g. PREM, MARC, RISE, SCORE, STEP, NASA, CIRM, and NOYCE). Students frequently accompany faculty to professional meetings to present their research through poster and oral presentations, and co-author peer-reviewed papers. An excellent example of the commitment by faculty to student research is the CSM Graduate Fellowships for Outstanding Promise in Research. The funds for these fellowships come from the pool of money used by other colleges to support the Research Fellows Program. But the CSM faculty and Department Chairs overwhelmingly made the decision to award the fellowships to students rather than to faculty.

Assessment: Over the past 5-8 years, CSM has progressed from essentially zero assessment, to inadequate and uninformative assessment, to rigorous data collection, to informed reflection, and now finally to active use of assessment results to refine curriculum and improve program structure. Assessment is today a regular part of the faculty discussion regarding student performance, and several significant changes have been initiated based on information gathered via assessment. Some major highlights of the use of assessment data: (1) Biology instituted Peer-Learning Facilitators (PLFs), Supplemental Instruction (SI), and a "C or better" policy for pre-requisites before enrollment in upper-division core courses; (2) Biology also expanded assessment to the graduate program and now requires all MS degree students to publicly present a research thesis proposal early in their graduate career, as well as the thesis defense at its culmination; (3) Chemistry used past assessment data to initiate mandatory problem solving sessions (Chem 333D) with enrollment in Organic Chemistry (Chem 333); (4) Chem 321 increased emphasis on stoichiometry after comparison of CSUN student performance versus the national average; (5) a new course is being developed by Geology [an Earth System Science course] to fill gaps revealed by past assessment; (6) Math instituted a mandatory problem solving lab (Math 150AL) for calculus students with marginal grades in preparatory coursework; (7) Physics created a 'capstone' course to better prepare their students for their standardized senior exit exam – a nationally standardized ETS exam. Physics started assessing its graduate program by having all thesis defenses graded on a rubric where several factors are evaluated. Physics also, through assessment, modified the BS and BA programs to reintroduce Mathematical Physics as a required course. Our plans are to continue our assessment efforts, and to make curricular, programmatic, and student support changes as suggested by the assessment data. However, given that these are difficult majors requiring significant conceptual integration coupled with quantitative skills, it is likely that student performance will ultimately be limited more by K-12 preparation than by CSUN curriculum and student support efforts.

2. Supporting New Faculty

CSM places great importance upon hiring the best qualified faculty members, knowing that this is the single best way to ensure our future in teaching and research. Our goal is to hire the number one candidate in every search. New faculty members are provided with startup and three years of reassigned time to set up their laboratories and to begin collecting data for

inclusion in grant proposals. We strongly encourage the Provost's Office to establish a permanent fund for startup, which could then be counted on despite budget cuts and turnover in administration. While the Provost's move to provide reassigned time for a third year deserves praise, the recent decision to limit startup in CSM will have a crippling effect upon hiring; we strongly urge him to reconsider. For many candidates, startup funds are more important than salary because of the impact on the person's critically important early years. The College is also committed to providing research laboratory facilities for new hires. This frequently requires renovations, which can be expensive and time consuming. It is essential that Academic Affairs continues to partner with the College in covering the costs. Unfortunately, perhaps because of budget cuts and reductions in personnel in PP&M, delays in renovations are a major problem. For example, the laboratory for Chemistry Professor Simon Garrett took four years to complete. Delays in construction are a huge concern to the College, especially in light of the President's goal to double funding in just five years.

Additional support for new/probationary faculty members comes in the form of close mentoring by faculty and Department Chairs. In Biology, Chemistry and Biochemistry the Department Chair has regular meetings with the junior faculty members. In Physics and Astronomy, new faculty members are quickly included in research projects and senior faculty members provide guidance in grant proposal writing. The Dean and Associate Deans meet with the new faculty members over lunch during their first semester. All the departments have clear up-to-date personnel guidelines. In three departments MOU's are mandatory, and in a fourth department they are voluntary. All departments along with the Dean's Office provide travel dollars for attending professional meetings as well as occasional funds for laboratory supplies and equipment.

Five new tenure track faculty members started fall, 2013 (one was hired fall 2012) and one begins January, 2014. Unfortunately, hiring has lagged far behind increases in enrollment: Since 2001/02 fall enrollment almost doubled (from 2,400 FTES to 4,623 FTES). But at the same time the number of faculty increased from 97 to only 119, with the result that the SFR increased from 18.6 to 29.6; this number is high for CSUN and is only exceeded in CSBS and COBAE. Even Humanities has a lower SFR than does CSM. At the same time the number of part time faculty actually fell from 83 to 71. Hence, it is the tenure-track faculty who are shouldering the large increase in enrollment. Obviously the College cannot continue this trend; additional tenure-track faculty members are urgently needed and, second only to salary increases, should be a major priority of the University.

3. Demonstrating Integrated Planning: Actions to Meet IT Vision@2015 and the Campus Sustainability Plan

We continue to schedule classes more efficiently, maximizing classroom utilization. More large classroom sections are now available, which greatly helps our course offerings (Thank you Diane Stephens!) We recommend that central administration review the current scheduling practices, with the aim of improving efficiency. The current process is long and drawn out, with an insane free-for-all at the end, forcing staff and faculty to compete for a few available classrooms at all hours of the night. Mary Rosen and Yen Duong are literally up at midnight scheduling math classes. There must be a better way! Also, priority is based upon the number of majors in a department, and hence a department like Physics and Astronomy with a large FTES because of GE courses has little chance of getting the classrooms it needs.

CSM has several faculty members actively involved with the campus Sustainability Initiative, including Professors Maria D'Orsogna, Dan Curtis, Yann Schrodi, and Tom Minehan; a newly hired Professor, Mads Anderson, may also participate. An increasing number of faculty members have been seen "dumpster diving", but this may be the result of no appreciable salary increases for the last decade rather than from a growing interest in recycling. CSM is a leader in offering online and hybrid courses, which reduces the number of trips students make to campus. For example, Biology offers online courses in BIOL 100, 101, 106, 241/L, 281, 352/L, and 441/L. The number of hybrid and online courses will continue to grow: Physics and Astronomy is developing a hybrid format for an introductory laboratory taken by 300 students each semester; Geology has been selected by the Chancellor's Office to develop an online course (Geology Goes Hollywood); Chemistry and Biochemistry just began offering its first formal hybrid course (CHEM 100; which is also in a "flipped" format with online lectures and on-campus recitations) and has plans to continue it under the direction of Dr. Dorothy Nguyen-Graff, which is also "flipped". The move to a paperless environment progresses rapidly. A good example is the use of e-materials: six courses in Geology, online lab manuals in five chemistry classes, an online text for CHEM 100 and 465 and 422 in the near future, online homework assignments in six chemistry classes and ASTR 152, and the future use of online examinations in several large enrollment math classes (which could save 25,000 pages of paper per semester). College IT staff advise faculty/staff/ students to print documents to PDF for emailing, shared folders are available for the electronic storage of documents, and we participate in the toner and paper recycling programs. Urinals in the men's restrooms in Eucalyptus Hall are now 'waterless' in order to reduce water usage; however the stench is often overpowering because the waifers used to absorb the union are completely inadequate to handle the volume of urine (eeeewwwww). Finally, some faculty members are threatening to start composting in the hallways from the uncollected trash.

In terms of meeting the IT Vision@15, all the student computer labs have been moved to Active Directory and the staff and faculty computers are currently being moved there, the College's main web pages were migrated to WebOne and the department web pages will be migrated by summer, the server racks in the MDF building are being reconfigured to enhance cooling and meet future demand, Biology has taken a leading role in the campus iPad initiative (Professors Van Buskirk, Stein, Robertson, Malone, and Basu are pioneering the use of iPads in fall 2013), and we continue to support Mathematica on VSL as well as to identify other software for inclusion on VSL that will be used by students.

4. Increasing Basic and Applied Research and Sponsored Programs

The College will continue to offer a robust summer program through Extended Learning. This has provided badly needed revenue: \$618,000 in 2010, \$667,000 in 2011, \$737,000 in 2012, \$629,000 in 2013. Given unprecedented demand in enrollment and meddling with academic year targets by the Chancellor's office, the College should be able to continue a profitable summer program.

As described above, the College has a long tradition of scholarship and has put into place incentives and devoted considerable resources to enhance and expand research. The number of faculty members awarded external grants is impressive, especially given the harsh economic climate we're in; for example 8 out of the 10 geologists are currently funded by

extramural grants, in Biology 12 new grants totaling over \$3M were awarded in the last year, and Professor Kioussis is co-PI on a new \$13M NSF grant. We strive to hire first choice candidates, hire in areas where there is high potential for external funding, provide reassigned time, invest in infrastructure (equipment and laboratories), support teams of researchers (e.g., Keck Center, IRIS, marine biology, CSCS science education, CEMR), and commit to matches on grant proposals. Unfortunately Provost Hellenbrand recently decided to limit his contribution to start up, which will have a disastrous effect on hiring new faculty members in the sciences. Where there is interest among the faculty members, the College will pursue inter-college collaborations such as on Title V and sustainability grants. The College has a long standing tradition of collaborating with the College of Education, and sees future potential for collaborations in the Colleges of Social and Behavioral Sciences (a neuroscience program is being planned), Health and Human Services, and Engineering and Computer Science. President Harrison's plan for "cluster hires" should include CSM, especially in areas such as material science where there is a high probability for success and for intercollegiate/multidisciplinary collaboration. Other potentials for cluster hiring involving CSM are Geology/Geography, Biology/Psychology, and CSM/EDU. The College strongly supports the current efforts of the Department of Physics and Astronomy headed by Professor Nick Kioussis to establish a joint PhD program with UCLA.

CSM is currently developing a Graduate Student Fee Waiver Program which, with the Provost's approval, will be piloted fall, 2014. The program is urgently needed because we have reached a point where salaries for Teaching Associates barely cover tuition, let alone living expenses; this severely limits our ability to recruit graduate students and in turn limits our research program. The following draft is being proposed: Graduate fee waivers will be distributed according to the research accomplishments and promise of the faculty members who apply for the fee waiver support. Fee waivers may be given to both current and incoming graduate students. Probationary faculty in active pursuit of internal and/or external funding will be given extra consideration. Tenured faculty members who have demonstrated high research productivity and active pursuit of grants are strongly encouraged to apply. Eligibility for fee waivers is restricted to graduate students who are also Teaching Associates. Interested faculty members should submit a one-page application (attached) by November 15, 2014 for graduate fee waivers effective in the Fall of the following academic year. This will allow faculty members to use granted fee waivers to recruit highly qualified new graduate students. The five CSM Department Chairs will constitute the fee waiver committee and will rank applications based upon the faculty member's research merit. Individual graduate fee waivers may be granted for one year, renewable for one additional year. Waivers will initially be limited to one per faculty member.

5. Increasing Revenue Generation

CSM recognizes the urgent need to supplement declining state funding; in 2011/12 the College's base budget was cut \$682,000 and in 2012/13 it was cut another \$868,000. More cuts are undoubtedly on the way. CSM is the leader on campus in extramural funding; during each of the last three years the CSM faculty members were awarded close to \$10,000,000 in external funding. This represents an enormous effort on the part of the faculty. In the 2011 calendar year, faculty submitted 73 grant proposals to external agencies. All new tenure-track faculty hires are expected to seek external funding, which is explicitly stated in the job ads and in the Department and College personnel procedures. The College recently

developed a Bridge Policy to provide funding and reassigned time for up to one year to faculty members who lost a major grant and were not able to get a renewal. It is probably time for the College to discuss a policy on teaching load that addresses levels of research productivity, and to closely examine the use of equipment technicians in light of the ever increasing needs of research active faculty members.

As discussed above, faculty members in CSM are developing e-texts, e-manuals, and online materials that generate additional revenue while at the same time saving money for students. For example Dr. David Miller is able to offer his e-text for only \$25, which he estimates has saved students a total of \$150,000 so far while at the same time providing income to the Department of Chemistry and Biochemistry. Dr. Simon Garrett hopes to extend this effort by developing an e-text for CHEM 321. And for the last four summers CSM faculty have made good use of Extended Learning, earning \$600,000 to \$700,000 (excluding salaries) each summer for the College.

A new Development Officer started in May, filling the position left vacant since last January. The College recently closed a gift to the Department of Geology for \$1.25 million—the largest in CSM’s history. The gift includes the endowment of a graduate fellow and a major program redesign. We will continue to increase revenue this year over the record-breaking \$1,346,572 raised in 2011-12. For the next year, the Development Director plans to: 1) increase the number of face-to-face visits with qualified prospects and donors to 180, moving them through cultivation to solicitation; 2) actively identify, qualify, and cultivate new internal and external major and principal gift level individuals and corporate and foundation prospects (400 substantive actions) in order to secure current support and to build a healthy pipeline of donors capable of making gifts of \$50,000 and over, 3) craft a dozen stewardship plans, 4) work collaboratively with faculty members to maximize the number of prospects and increase giving, 5) and solicit \$4.1 million to obtain \$1.3 million. Emphasis will be placed on relocating the solar observatory, scholarships, equipment purchases, and endowed chairs. To encourage planned gifts, two Dean’s luncheons are being planned and every effort will be made to procure bequests to ensure a healthy fiscal future.

6. Creating and Maintaining Partnerships with the Community

CSM is involved with a variety of activities at the community level, and takes seriously its role as a resource and partner. Examples include Professor Vandergon and Dr. Nguyen-Graff in Earth Day, Professors Weeraratne and Yule in The Great California Shake Out, Dr. Jan Dobias’ biweekly Planetarium star shows, Professor Allen’s 3,000 gallon “aquarium on wheels”, Professor Marsaglia’s hosting of the annual Association of American Petroleum Geologists EXPO (a three day jobs fair attended by 150 students and many companies), Professor Melikyan’s numerous public appearances speaking on dietary pseudoscience, and Professor Christian’s public viewing of the solar transit by Venus. Faculty members are frequently called upon as experts in plant, animal, and mineral identification, and also on environmentally sensitive issues such as habitat diversity, geology, and impact by humans. Several of the Departments have maintained strong ties with alumni. Noteworthy are the efforts in Geology, which include GeoTrek, Field Frolic, and various events such as the Gene Fritsche Memorial Hike last October. Biology recently started an Alumni Chapter which is now headed by Mr. Ian Leslie; given the large number of biology alumni this effort promises to be quite significant. Both Physics and Astronomy and Chemistry and Biochemistry plan to write a Newsletter for alumni and surrounding high tech companies, and Physics and

Astronomy will be inviting successful physicists and astronomers (including alumni) to give presentations to students. Finally, CSM maintains strong ties with the K-12 community, with faculty members visiting schools, hosting school groups on campus, conducting workshops for teachers, and developing pedagogy for K-12. Of particular note are the efforts by the marine biologists, meeting with Malibu city council members and the teachers and staff of the MUSE school in Malibu, to establish a marine lab on the Malibu pier with research, teaching and outreach facilities.

Reflections Through a Glass Darkly

The College of Science and Mathematics continues to make good progress on its annual goals, despite severe budget cuts, record enrollments, an anemic hiring pace, and no faculty raises for six years. The situation with salary is really quite dire because not only are there no increases for the foreseeable future, but also because undoubtedly the current salaries will soon be eroded by increased employee contributions to benefits. The university needs to develop a strategic plan to address this issue. In this climate I question the wisdom of expensive construction projects such as VPAC and a mid-size conference center with their long term maintenance costs. Retention and graduation rates for first time freshmen are very good and reflect the expanded advising and tutoring by SSC/EOP and all five departments.

Unfortunately, retention and graduation rates for transfer students continue to decline. All five departments have active assessment programs and all departments have made significant changes in curriculum/programs based upon assessment data. The percentage of Friday/Saturday courses increased from 5% two years ago to 12% last year to 18% this year, which is well above the target of 15%. The College also continues producing more electronic course materials, hybrid/online courses, and teaching more large sections.

Strong enrollment growth continues to challenge the College, which has exceeded its target by 400 FTES for the last two fall semesters. Most campuses within the CSU are also experiencing unprecedented growth in these areas (especially in biology), probably reflecting the economy since the number of STEM majors typically increases during economic downturns. In addition, President Obama's emphasis on the need for more STEM majors in the workforce to stay globally competitive may be having an effect. A third factor is that students today live with science and technology all around them, and they want to be a part of it. The College exceeded its fall 2012 target by 423 FTES, but never received \$404,000 in growth money. We can only hope that this disastrous decision does not re-occur this year. The Department of Biology is especially impacted, with students literally waiting to the last minute for sections to open because they must take biology courses to graduate.

Growth in scholarship is impressive: When I arrived in 2005, external funding for 2005/06 was \$4.4M; the numbers for succeeding years are \$6.4M in 2006/07, \$6.9M in 2007/08, \$6.3M in 2008/09, \$8.5M in 2009/10, \$9.6M in 2010/11 and \$9.9M in 2011/12. The College has twice as many awards as the next closest college, and the College generates very close to half of the indirects generated on campus, which funds much of the grant related activities in GRIP and the University Corp and much of the Large Grant Policy release time allocated to the other colleges. Kudos to the CSM faculty for making this happen. The College is on pace for the biggest fundraising year in its history, with a single donor gift of \$1.25M to Geology.