

## **PRECIS**

### Program Performance Review

#### **Biological Science, BS, MS** College of Natural Sciences and Mathematics

Dr. Robert Koch, Chair

December 5, 2008

#### **Background**

The Department of Biological Science conducted a program performance review during 2007-08. The review included a self-study. In addition an external review team made an onsite visit reviewed the self-study and other documents and conducted interviews which included the Dean of the College, Associate Dean, faculty staff, and students. The members of the review team were: David Bowman, Professor and Chair, Department of Geology, CSUF; James Dietz, Professor and Chair, Economics, CSUF and Michael A. Goldman, Professor and Chair, Department of Biology, San Francisco State University. At the conclusion of the visit the external review team submitted a report of its findings. Also, the Dean provided his summary and recommendations and the department responded to the report of the external review team. The Department's self-study was detailed and responsive to the guidelines.

#### **Key Data**

At the time of the review, the Department was assigned 41.8 full-time equivalent faculty (FTEF). In that present academic year the Department had 24.0 FTEF positions occupied with even distribution across the ranks 8 assistant professors 8 associate professors 7 professors and 2 FERP. In addition, there were 2 full time lecturers and 25-30 part time faculty. The undergraduate enrollment FTES grew over the last several years in 2002-03 there were 728 FTES and in 2007-08 the number had risen to 872. Graduate enrollment rates have dropped slightly over previous five year period in 2002-03 there were 22 enrolled and in 2006-07 70 applied but 19 enrolled. The Department notes that it loses a significant percentage of majors who entered the biology major as freshmen. In six years only 13-20% of those who had entered as first-time freshmen graduated with a BS in Biological Science, and another 14-25% remain in the seventh fall semester. Over the last five years the Department has awarded 537 undergraduate degrees the numbers have increased from 99 degrees awarded in 2002-03 to 113 awarded in 2006-07. The Department's graduation rates for first-time full-time freshmen majors was slightly less than for transfer majors in fall 2001 (the latest figures cited) 33% of the freshmen majors graduated in 6 years or less or were not graduated but still enrolled fall year 7 while 35% of transfer students graduated during same time.

## **Key Issues**

Like many large departments retention is a challenge it is estimated that the Department loses 30% of freshmen majors within a year. The Department has moved to address retention one suggestion was to conduct supplemental instruction sessions to provide support to students during the transition from Biology 171 to 172 and to smooth their transition from one to the other. Outside funding would be sought to support such activities. Another project related to retention would be to track students who have graduated from the department to identify what worked and did not work with respect to preparation of students for the work force – the department has put in place a committee that will seek to follow up with graduates.

The Department has placed emphasis for science education research on college-level learning and pedagogy and has made a commitment to training teachers. To this end the Department is planning to bolster the curriculum by developing a concentration for students interested in becoming teachers. And the management team of the department is refining its hiring plan to developing faculty interested in biology education. The department will review all concentrations to ensure that various groups are being served effectively including pre-health professions.

Questions have been raised regarding the active-learning/critical thinking/problem solving/inquiry-based core curriculum. Some think this approach might be pitched too high for the beginning students who are enrolled in Biology 171 and 172. Whatever the case the Assessment Committee and Core Instructions Committee will continue to address issues related to the core curriculum

The Department has indicated a need to increase the quality of space (physical facilities). Listed as priorities include: upgrades to Greenhouse Complex, upgrades of Stem Cell Biology Laboratory, relocation of tissue sectioning facilities, upgrades GE Biology Labs and upgrades of Human Anatomy Complex.

## **Outcomes Assessment**

The Biology department has been identified as a leader in the assessment of student learning outcomes. The Department was selected to make a presentation at last years Western Assessment Conference held on campus and was selected as “the” department to share its work in assessment to the participants at the summer institute on program performance review and assessment. The comprehensive assessment plan has five levels of application university wide assessment, programmatic assessment, course assessment, assessment of student effectiveness and assessment of faculty effectiveness. Overall goals for the program include: knowledge, skills, and attitudes. For the masters program there is also an assessment plan that primarily consists of stated outcomes and strategies, these outcomes and strategies should be linked to goals.

The department is at a state where it can utilize data currently being collected to inform and improve the curriculum. There is an active assessment infrastructure in the department with faculty members taking the leadership. In addition, the department has received external grant support for some of its earlier assessment efforts. The department realizes that challenges remain and has pledged that one of its priorities is to complete the undergraduate assessment plan so that it 'closes the loop' and fosters improvement of the curriculum by triggering development of new courses or refinement of existing courses. With all the intricacies of assessment activities in the department another challenge is to provide a more coherent construct.

## **Outlook**

According to the external review team, the Biology Department is a strong, vibrant community of scholars that places an emphasis on high- quality research, while striving to provide a cutting-edge education for its very large student population. The department is proactive in addressing its challenges whether it is a revision of concentrations or the acquisition of external funds to augment research. Like many large departments a challenge for the department is the improvement of retention and graduation rates. Faculty student research is a hallmark of the department; it is reported that at any given time there are approximately 100 undergraduates and 60-75 graduate students actively engaged in research in department faculty research laboratories. The department has also been cited for pursuing novel curricular ventures including a Center for Applied Biotechnology Studies centered at CSUF with other CSUs in the Los Angeles Basin participating. The program for applied biotechnology will offer the professional science masters degree called the Master of Applied Biotechnology; support came from the Sloan Foundation and the first cohort is expected to enroll in the fall of 2009. As stated above, the department has a comprehensive assessment initiative in place with continuous review for improvement. The Biology Department is a dynamic evolving enterprise that has used the program performance review process to chart its course for the future.