

Tipping Point Progress
College of Science

March, 2009

1. Examples of how assessment feedback has been used to modify activities for continuous improvement

- ☐ Feedback from industry advisors reinforced the Computer Science faculty's belief that learning GUI development techniques should have deeper coverage in the curriculum. Assessment data showed that coverage was sporadic in introductory programming courses, diluted by other important topics. A lower-division course on graphics (CS 245) was redesigned to focus on GUI Development.
- ☐ ABET accreditation requires Computer Science majors have preparation in ethical and social aspects of computing. Assessment data led the department to develop a dedicated upper division GE synthesis course (CS 375--Computers and Society) and require CS majors to take it. A Fall 2008 ABET accreditation visit confirmed that this development satisfied their criteria, and had the added benefit of attracting enrollment from interested students across the campus.
- ☐ Assessment in Geological Sciences permeates interactions in classes. For example, in a recent lab exercise that measured gravity differences in Building 4 students reviewed each step in their calibration, measurement and calculations with the instructor before proceeding to the next step. Student responses, along with on-the-spot feedback helped the instructor identify instances where either the laboratory procedures could have been better presented or the student could have taken a different approach to learning the material. This lab activity has been modified accordingly.
- ☐ In Biological Sciences, assessment of student achievement of the learning objectives for students indicated that the objective in most need of improvement was Learning Outcome #6: statistically analyze and interpret research data. In response, the department changed the undergraduate curriculum to require the basic course in biostatistics (BIO 211/211L Biometrics) of all undergraduates and is developing two new courses in biostatistics for graduate students. Previously, the course was not required for students in the Biotechnology, Botany, or Microbiology programs.

2. Measures taken to encourage students to take charge of their learning

- ☐ The college-wide first-year experience courses SCI 101 and SCI 102 connect faculty with students upon their arrival to Cal Poly Pomona, enabling them to help the new students look forward and better approach their future, both in education and beyond as productive citizens. The experience helps students think about effective learning skills, interpersonal and communication skills and analytical skills. Special emphasis is on good study habits, wellness, and making early connections with peers. Taking charge of their learning is the cornerstone of the first-year experience courses.
- ☐ Chemistry's Quantitative Analysis is the course with the highest failure rate in the College of Science. To help students succeed in this course, the department initiated Academic Excellence Workshops, modeled on the successful SEES and MEP program, for students in this course. Initial results are

positive: students develop the study skills needed to master the material. Trained peer tutors help current students identify their difficulties and find strategies to overcome them.

- ☐ Physics faculty are piloting recitation sections for the 120 and 130 level first year sequences. In two quarters where paired comparisons were made (sections with and without pilot sections) student performance increased by between 0.05 and 0.36 grade points and the percentage of students receiving D, F or U decreased by between 3 and 6 percentage points. The recitation sections appear to give students better feedback on their performance and help motivate them to adjust their learning process.

3. Effective methods used to measure customer satisfaction

- ☐ The Computer Science Department collects feedback from students in their culminating experiences. Surveys are given to undergraduate students in the Undergraduate Seminar, taken during the last quarter before graduation where students make presentations and write analytical. Surveys are given to graduate students who are defending Master's theses. The surveys ask students to quantify to what extent they are satisfied that program objectives have been met.
- ☐ The Computer Science Industry Advisory Board has gone virtual, moving to an online discussion board and having fewer face-to-face meetings. The online discussion solves the problem of gathering board members who are located outside Southern California and provides a natural archive of the advice and discussion that can be viewed by faculty and board members. During ABET's Fall 2008 visit, the accreditation team met with a lot of alumni, including a number of industry advisory board members, and virtual meetings were found to provide an effective and efficient means of gauging industry satisfaction and collecting their advice.
- ☐ The College's Math and Science Help Center has developed a survey instrument used to obtain feedback from users of their services. These data are used to modify staffing patterns to better serve students needs for tutoring.

4. Effective methods used to measure student learning (vs. what is taught)

- ☐ The department of Math and Statistics instituted Gateway Exams in Math 114, the first course in Calculus. These exams are designed to test student mastery of key concepts in the course. Last year, the department began a study of the effectiveness of these mastery exams at improving student performance and preparation for subsequent courses. Initial results are very positive and in the current quarter, this longitudinal and comparative study will serve as the basis for the department's approach to assessing student learning in its service courses.
- ☐ Computer Science and Biological Science developed pilot surveys to assess academic advising. After obtaining one round of data, the departments are adjusting the instruments based on the pattern of student responses. The instruments will serve as models for other departments to use in assessment of advising.