

DEPARTMENT OR PROGRAM: Biology and Health Science

DIVISION: Math/Science

1. BRIEF DESCRIPTION OF PROGRAM:

The Biology department, including Health Science, offers courses serving a range of educational goals from transfer to baccalaureate institutions for science and other majors, to prerequisites for horticulture, nursing, and medical assisting, and Health Science courses for general education. The Biology program is conducted in lecture and lab classrooms on the second floor of building 36, with occasional lecture classes on the first or third floor, and rarely in other buildings if needed.

The following courses are offered this academic year (2010-2011): Biology 100, 102, 110, 123, 126, 127, 128, 130, 145, 184, 195, 210, 220, 230, 240, 250, 260, 310, 680, 880, and Health Science 100. (Biology 126, 127, and 128 are cross-listed with Physics 126, 127, and 128). Since Fall 2010 Biology 310 (Nutrition) has replaced Consumer Arts and Science 310.

The department offers multiple sections of several 100-series and 200-series courses to accommodate the demands for general education, transfer majors, and pre-nursing. Due to budget reductions several sections were cut in Fall 2010, but most will be re-instated with Measure G funds. Due to space and facilities limitations the department cannot offer more sections of 200-level courses that are in constantly high demand (240, 250, 260).

The Biology department has five full-time Biology professors and a full-time Horticulture professor teaching Biology classes. One Biology retiree is in the third year of post-retirement teaching. The department currently employs nine adjuncts for Spring 2011 courses. The department is in the process of hiring a full-time Microbiology (Bio 240) instructor for Fall 2011. This person will also be able to teach other Biology courses.

The department offers daytime and evening schedules plus online sections of several courses (Bio 100, 130, 145, 310, HSCI 100), as well as two web-assisted courses (Bio 220, 260). The department works with Chemistry and Physics faculty to coordinate schedules of courses required by Biology majors.

2. **Based on the elements in your Core Program and Student Success Indicators (provided by PRIE for each program) and the goals stated in your most recent Program Review, please identify any key successes and challenges.**

From 2008/2009 to 2009/2010 enrollment in Biology classes increased 5/8%, Health Science enrollment decreased 4.4% while College enrollment increased 2.1%. Fewer sections of Health Science were offered in this period as the class was changed from 2 to 3 units. Demand for online sections of Health Science is high, as reflected by wait lists and students requesting to be added to sections that are full.

In the same period College WSCH was essentially unchanged while Biology and Health Science both increased 5.4%. Cuts to classes Fall 2010 had temporary effects on enrollments, since Measure G funds have provided for some reinstatement in Spring 2011 and more in Fall 2011. High demand continues in Anatomy, Physiology and Microbiology for pre-health majors, and demand has been increasing for Biology majors (transfer) in the past two semesters, causing students to be turned away from Bio 210 and 220 courses. Conversion of Bio 220 and 260 to web-assisted classes, with one lab session on campus and one online has eased problems of classroom space and scheduling, and allows addition of sections. Biology 220 will be offered Summer 2011 to accommodate the extra demand of Fall 2010 and Spring 2011. The department intends to convert Bio 210 to web-assisted in the next year, and if demand persists, offer two sections of Bio 210 each Fall semester and two sections of Bio 220 each Spring semester. Currently one section of each is offered each semester. The third course in the major sequence, Bio 230, currently accommodates students with a single section each semester.

Demand for online courses is very high, with every added section filling early. Since the first online offering of Bio 100 in 2002, the department has increased to 8 sections total for Bio 100, 130, 145, 310, and HSCI 100. More faculty are learning to teach online courses, including meeting challenges of retention and success that differ from those of traditional courses. The college needs to offer WebAccess training to increase the cadre of faculty trained in the online delivery system. The Math/Science division is partly addressing the training issue by having faculty presentations, and or discussions of online/web-assisted instruction included in each division meeting.

The fundamental reasons for retention and success failures is the same for both traditional and online instruction: students' inadequate preparation and enrollment in courses without completing prerequisites. But even for qualified enrolled students there is a problem of unrealistic expectations of the community college course. Students who have adequate English reading and writing skills often lack study skills, because they were not required to work hard in high school classes, and were led to expect that community college classes are equally unchallenging. Biology faculty continues pursuing methods and assessment that motivate students to strive in science classes. Students taking online classes need to be organized and need to schedule the online class as part of their weekly assignments and demands on time. Some students enroll in online classes expecting them to be self-paced courses, when they are like regular classes with homework and activities due on a regular basis.

3. **Are you on track for meeting the goals/targets that your program identified in its most recent Program Review? If not, please explain possible reasons why. If needed, update your goal/targets based on these reasons.**

Overall the Biology department is on track with its goals. The following goals were described on the last program review, and each is followed by comments on progress:

Goal 1. Increased student success through individual efforts of each faculty member, department cooperation and planning, interdisciplinary conversations and projects, and incorporation of GE-SLOs of Effective communication, Quantitative skills and Critical thinking into courses. Progress: Retention and Success for Biology were unchanged between 08/09 and 09/10, but PRIE is behind in data, so it cannot be determined if the goal set in Spring 2010 has been met by 2010/2011. SLO work in Spring 2010 and faculty projects continue to work toward the improvement of student success. SLO results and updating of course outlines led to some changes in SLOs to make more cogent assessment-revision cycles.

Goal 2. Academic excellence, especially components of employment readiness, SLO cycles and improving effectiveness of distance learning.

Progress: Hiring of a full-time Microbiology Instructor for the Biology department will greatly enhance our pursuit of academic excellence: the new Instructor will coordinate the microbiology program, teach the majority of sections, keep the curriculum updated, tend to students during open lab and office hours, and keep the program vibrant. He/she will coordinate SLOs and assessment, work with the stockroom manager to develop laboratory materials and coordinate purchases of supplies and equipment, contribute to ongoing biology department and college activities and initiatives.

Addition of online courses and faculty attendance (including presentations) at training sessions for distance learning are contributing to the quality of online courses.

Goal 3. Relevant, high-quality programs and services, notably building capacity for allied health programs and further diversifying delivery modes.

Progress: Severe limitations of space and facilities make increasing capacity difficult; the faculty is waiting to include the new Microbiology instructor in plans to deal with the demand for more allied health-related sections. Conversion of Bio 220 and 260 to Web-assisted mode has been successful as has added sections of online courses, including some courses offered exclusively online (Bio 145, 310). The faculty agrees that lab courses must have three hours of on-campus hands-on lab, and diversifying delivery modes should not include loss of such labs. The increase in numbers of sections of online courses continues every semester, offering more opportunities for students unable to attend campus classes.

A new Horticulture/Floristry/Biology lab would contribute to the department's ability to add more lab classes. Our program is extremely efficient; adding double lab sections in the new lab room would contribute to the overall efficiency of the biology department and the college. Additional lab facilities would provide much need relief for the present highly impact lab facilities and provide for better coordination with the horticulture/floristry program. A renovated building 20, with its adjacency to building 36, would offer immediate relief to the currently impact science labs.

Goal 4. Enhanced institutional dialog, especially increased faculty participation in shared governance, improved campus-wide communication and promoting a diverse, open climate in general and in decision-making, along with incorporation of GE-SLOs of Social awareness and diversity and Ethical responsibility.

Progress: Even with longer teaching hours than other faculty, due to labs, and voluminous grading associated with lab work as well as lecture, Biology faculty are highly active in shared governance throughout the college. Because of the inspiring pro-active stance of the division

dean Biology faculty cooperate with other faculty in division tasks and projects. The department changed the catalog descriptions of Biology from the antiquated and hard-to-find "Life Sciences" to "Biology" and changed the AA degree to AS, since the state chancellor's office will soon request that all science majors complete AS rather than AA degrees.

4. **Have you identified any new goals or projects for the program to focus on during this next year? Please explain (grants, stipends, initiatives, etc.).**

Biology and chemistry faculty members under the guidance of the division dean are planning to apply for a bridge grant. The main purpose of the grant is to offer our most advanced biology majors the opportunity to pursue a paid summer internship at a lab in one of two the partner institutions. The work on the grant is very preliminary with a possible submission date of September 2011.

5. **Are there any critical issues you expect to face in the coming year? How will you address those challenges?**

A threat to many biology classes is the potential destruction of the Native and Nettle gardens. The college administration is proposing to destroy the gardens to build a staff parking lot. The gardens provide students with opportunities to conduct field studies much like professional biologists do. The gardens contain a collections of mature specimens including living fossils, a unique collection of gymnosperms from different parts of the world, a number of plants that are rare and endangered in nature, and the opportunity to observe assorted wildlife in well-established habitats. These gardens and their organisms contribute to the strength of the biology program, and student success in 43% of biology classes. The potential loss of our greenhouses will affect the quality of student learning opportunities, in Horticulture and Biology. Science faculty have been presenting data to district and college administration in the hope that they will maintain the integrity of the gardens that support instruction. Several biology classes have designed field activities and hands-on activities that are critical to students' success using the plants and other resources available in these gardens. The Native and Nettle gardens are located North of building 20. Science faculty had hoped that a renovated building 20 will add much needed space for additional science labs. It is the hope of science faculty that the president and his cabinet seriously consider keeping the gardens intact and in their current location. The quality and ranking of our transfer program may be undermined by the destruction of these gardens and the habitat they provide to assorted wildlife.

6. **STUDENT LEARNING OUTCOMES (SLOs) AND ASSESSMENT FOCUS FOR THIS YEAR:**

Academic areas: Identify at least one course SLO on which to focus. Describe the assessment strategies you will use and your method of reflection and documentation for this cycle.

The previous SLO coordinator has been preparing reports on SLO data entered into TracDat and generated a 36-page report on details of Biology SLO work, including assessment strategies and results from Spring, 2010. This will be updated and augmented Spring 2011, thus the department is already focused on many SLOs and assessment strategies in all our courses. Documentation will again be in TracDat.

7. **SUMMARY OF RESOURCES NEEDED TO REACH PROGRAM ACTION STEPS**

(Data resources: Educational Master Plan, 2008, Institutional Priorities, 2008-2011, College Index, 2009-2010, GE-SLOs, SLOs; department records; Core Program and Student Success Indicators; previous Program Review and Planning reports)

- a. In the matrices below, itemize the resources needed to reach program action steps and describe the expected outcomes for program improvement.* Specifically, describe the potential outcomes of receiving these resources and the programmatic impact if the requested resources cannot be granted.

*Note: Whenever possible, requests should stem from assessment of SLOs and the resulting program changes or plans. Ideally, SLOs are assessed, the assessments lead to planning, and the resources requested link directly to those plans.

Full-Time Faculty Positions Requested	Expected Outcomes if Granted and Expected Impact if Not Granted	If applicable, <u>briefly</u> indicate how the requested resources will link to achieving department action steps based on SLO assessment.
<p>Request for Anatomy and Physiology Instructor The demand for pre-health care courses is high and growing. The department has responded by increasing the number of sections of anatomy and physiology offered. The department offers 6 anatomy and 3 physiology sections in each semester, fall and spring, and 2 anatomy sections in summer. Although there are 3 full-time faculty teaching anatomy and physiology, one has very limited units available to A&P. Anatomy and physiology are specialized fields that cannot be taught by a general biology instructor, unless he/she is specifically trained in the field. The quality of a program hinges on full-time faculty who keep the curriculum updated and vibrant, tend to students during open lab and office hours. Success and retention of students in microbiology, anatomy, and physiology courses will be best served with full time faculty who collaborate with support services to ensure student preparation for the courses, in addition to teaching them.</p>	<p>If granted the Anatomy and Physiology instructor will collaborate with our skilled team of anatomy and physiology instructors, teach several sections of anatomy and physiology each semester. The instructor will help keep the curriculum updated, tend to students during open lab and office hours, help coordinate SLO assessment, and contribute to ongoing biology department and college activities and initiatives.</p> <p>In the absence of a full time position in anatomy and physiology, many sections will continue to be staffed by adjunct instructors. Office hours and open lab hours will continue to be limited by instructor availability. The department and campus community will be without a vital contributor.</p>	

- b. For instructional resources including equipment and materials, please list the exact items you want to acquire and the total costs, including tax, shipping, and handling. Include items used for instruction (such as computers, furniture for labs and centers) and all materials designed for use by students and instructors as a learning resource (such as lab equipment, books, CDs, technology-based materials, educational software, tests, non-printed materials). Add rows to the tables as necessary. If you have questions as to the specificity required, please consult with your division dean. Please list by priority.

Resources Requested	Expected Outcomes if Granted and Expected Impact if Not Granted	If applicable, <u>briefly</u> indicate how the requested resources will link to achieving department action steps based on SLO assessment.
<p>Item: Olympus CH-2 binocular microscope Number: 25 Vendor: Input text here. Unit price: \$1750 Total Cost: \$43,750 Status*: Replacements</p>	<p>Microscopy is one of the mainstays of the microbiology course. With a new full-time microbiology instructor starting Fall 2011, curriculum planning, course updates and SLO assessment will be improved with microscopes in excellent working condition. The microscopes in microbiology are showing their wear. The newest ones are 21 years old, and some are over 30 years old. They are having more problems since we increased to 4 lab sections per semester, plus summer. By the time of the annual scope repair/cleaning, there are several that are out of service.</p> <p>In the past, we have purchased these scopes a few at a time, but models are reconfigure, so they don't have the exact same features by the time a set is complete.</p>	<p>SLOs for BIOL 240 (Microbiology) can be better assessed, and student success and retention is expected to improve with more student-directed investigations.</p>

<p>Item: Camtasia license Number: 5 Vendor: TechSmith. Unit price: Individual \$299.00. 10-14 licenses is \$199.00 each [The Math department is requesting 5 licenses. If we bundle the request together we'll benefit from a lower price.]</p> <p>Total Cost: 1,990.00 if bundled with Math. \$995.00 if five are bought separate.</p> <p>Status* new</p> <p>It needs to be determined if Biology can bundle with Math</p> <p>Licenses are for T. Beliz, T. Martin, and C. Smith for podcast production.</p>	<p>Camtasia software allows for use of a mouse to walk students through graphics and other visual materials. This software has a great range of podcast productions. Purpose of the podcasts is to increase student success. The podcasts enhance learning and retention by helping students spend more time on task studying online and web-assisted course materials. If not granted we will be missing a superb opportunity to maintain and increase student success in our classes.</p>	<p>Student success and retention are critical goals in our programs, and in all of our online and web-assisted course offerings.</p>
<p>Item: Crushed ice machine Number: 1 Vendor: Scotsman Unit price: \$2200 Total Cost: \$2200 Status*: Replacement</p>	<p>This piece of equipment is needed for multiple labs each semester. With an ice-cube machine a "sno-cone" maker must be used before classes to crush ice to fill several ice buckets for use on small tubes used in enzyme, protein and DNA lab exercises for Cell Biology, microbiology, physiology and some general biology sections. Although the Scotsman unit we purchased with the new building had serious problems within 3 years of purchase, very few vendors carry crushed-ice machines. The current machine must be plugged in and used to prepare ice long in advance of labs, and then turned off and drained.</p>	<p>SLOs for BIOL 110, 230, 240, 260 can be better assessed, and student success in them is expected to improve with more student-directed investigations.</p>
<p>Item: Antibiotic disc dispensers Number: 4 Vendor: Hardy Diagnostics. Item # 260661 Unit price: \$671.00 Total Cost: \$2,684.00. Status*: Replacement</p>	<p>These are to replace ancient, broken dispensers in microbiology lab.</p>	<p>SLOs for BIOL 240 can be better assessed, and student success in them is expected to improve with more student-directed investigations.</p>

<p>Item: EKG sensors Number: 4 Vendor: Vernier. Item # EKG-BTA Unit price: \$147.00 Total Cost: \$600.00 Status*: new</p>	<p>For physiology labs. These are to be added to our current stock so more groups can do work at the same time.</p>	<p>SLOs for BIOL 260 can be better assessed, and student success in them is expected to improve with more student-directed investigations.</p>
<p>Item: Spirometer set Number: 4 Vendor: Vernier. Item # SPR-BTA Unit price: \$199.00 Total Cost: \$796.00. Status*: new</p>	<p>These are to be added to our current stock so more groups can do work at the same time.</p>	<p>SLOs for BIOL 260 can be better assessed, and student success in them is expected to improve with more student-directed investigations.</p>
<p>Item: Spirometer flowheads Number: 5 Vendor: Vernier. Item # SPR-FLOW Unit price: \$60.00 Total Cost: \$300.00 Status*: New</p>	<p>These are to be added to our current stock so more groups can do work at the same time.</p>	<p>SLOs for BIOL 260 can be better assessed, and student success in them is expected to improve with more student-directed investigations.</p>
<p>Item: Inflatable lung model set of normal and smoker's lungs Number: 1 Vendor: Ward's Science Item #14W8335 Unit price: \$350.00 Total Cost: \$350.00 Status*: New</p>	<p>To be used for comparisons of lung function between healthy and diseased lungs.</p>	<p>SLOs for BIOL 250 can be better assessed, and student success in them is expected to improve with more student-directed investigations.</p>

*Status = New, Upgrade, Replacement, Maintenance or Repair.

8. PROGRAM REVIEW PARTICIPANTS AND SIGNATURES

Date of this *Annual Update for Program Review and Planning* evaluation:

Please list the department's *Annual Update for Program Review and Planning* report team as appropriate:

Primary program contact person: Kathleen Diamond
Phone and email address: 574-6602 diamondk@smccd.edu
Full-time faculty: Kathleen Diamond, Tania Beliz
Part-time faculty:
Administrators:
Classified staff:
Students:

<hr/> <i>Primary Program Contact Person's Signature</i>	<i>Date</i>
<hr/> <i>Full-time Faculty's Signature</i>	<i>Date</i>
<hr/> <i>Part-time Faculty's Signature</i> (as appropriate)	<i>Date</i>
<hr/> <i>Administrator's Signature</i> (as appropriate)	<i>Date</i>
<hr/> <i>Classified Staff Person's Signature</i> (as appropriate)	<i>Date</i>
<hr/> <i>Student's Signature</i> (as appropriate)	<i>Date</i>
<hr/> <i>Dean's Signature</i>	<i>Date</i>

**Annual Program Review
RESOURCES FOR SUPPORTING DOCUMENTATION**

This section contains a listing of sources for data and key documents referred to in this *Annual Update* along with other resources. Contact information for relevant people is also included.

Academic Senate

<http://www.collegeofsanmateo.edu/academicsenate/>

Contact: csmacademicsenate@smccd.edu

Diana Bennett, President, bennettd@smccd.edu, (650) 358-6769

College Catalogs and College Class Schedules are archived online:

<http://collegeofsanmateo.edu/schedule/archive.asp>

Course Outlines are found at:

<http://collegeofsanmateo.edu/articulation/outlines.asp>

Committee on Instruction

<http://www.smccd.net/accounts/csmcoi>

Contact: Laura Demsetz, Chair, demsetz@smccd.edu, (650) 574-6617.

Program Review Resources (includes forms, data, and completed program reviews for both instructional and student services program review)

Core Program and Student Success Indicators (see links for "Quantitative Data for Instructional Programs")

Distance Education Program Review Data

Glossary of Terms for Program Review

Listing of Programs Receiving Program Review Data from PRIE

Rotation Schedule for Instructional Program Review, 2008-2014

http://collegeofsanmateo.edu/prie/program_review/program_review.php

Office of Planning, Research, and Institutional Effectiveness (PRIE)

<http://collegeofsanmateo.edu/prie/>

Contact: John Sewart, Dean, sewart@smccd.edu, (650) 574-6196

Contact: Milla McConnell-Tuite, Coordinator, mcconnell@smccd.edu, (650)574-6699

At PRIE Website:

College Index, 2009-2010, http://collegeofsanmateo.edu/prie/institutional_documents.php

Comprehensive Listing of Indicators and Measures, 2009-2010

http://collegeofsanmateo.edu/prie/institutional_documents.php

Division/Department Workplans, Spring 2009 (only)

http://collegeofsanmateo.edu/prie/institutional_documents.php

Educational Master Plan, 2008, <http://collegeofsanmateo.edu/prie/emp.php>

Institutional Priorities, 2008-2011

http://collegeofsanmateo.edu/prie/institutional_documents.php

Student Learning Outcomes (SLOs) website:

<http://www.collegeofsanmateo.edu/sloac/>

Contact: Frederick Gaines, Interim SLO Coordinator, gainesf@smccd.edu, (650)574-6183