

DEPARTMENT OR PROGRAM: BIOLOGY & HEALTH SCIENCE

DIVISION: MATH/SCIENCE

1. BRIEF DESCRIPTION OF PROGRAM:

The Biology department, including Health Science, offers courses serving a range of educational goals for students, including transfer to baccalaureate institutions in both non-science and science majors, prerequisites for programs including 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. Several sections of lecture courses are offered online, and some lab courses are web-assisted.

The following courses are offered this academic year (2011-2012): Biology 100, 102, 110, 123, 126, 127, 128, 130, 145, 184, 195, 210, 220, 230, 240, 250, 260, 310, 690, 880, and Health Science 100. Biology 126, 127, and 128 are cross-listed with Physics 126, 127, and 128 and make up the sequence in the CalTeach/Aurora program to provide students with experience teaching K-12 math and science.

The department offers multiple sections of Biology 100, 110, 130, 240, 250, 260, and 310, and HSCI 100 to meet the requirements for general education, transfer, and pre-nursing demand. Since Fall 2010 HSCI 100 increased from 2 to 3 units and became optional for AA and AS degrees, so the department reduced the number of sections offered. For Fall 2011 and Spring 2012 a total of 16 sections of lecture courses were online (Bio 145 is only online). Bio 220 and 260 are web-assisted, and Bio 210 will become web-assisted in Fall 2012. The changes in these 5 unit courses improve scheduling for students' schedules and classrooms without sacrificing lab experiences, and allow the department to offer double sections to meet demand. The department works with Chemistry and Physics faculty to coordinate schedules of courses required by Biology majors.

As of Fall 2011 the Biology department has seven full-time Biology professors. The department has eight adjuncts teaching courses. All Biology courses have at least some sections taught by full-timers except for Bio 130. Since the department was able to hire a Microbiology instructor Fall 2011, Biology 240 is now taught by a full-timer. The department has difficulty staffing courses each semester, especially Bio 250 (Anatomy) sections and online courses. Reliable staffing of classes is a major goal of the department.

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.

A major success this year was having a new full-time faculty to teach Microbiology. As described in our request for the position, the new faculty has provided for consistency and evaluation of the microbiology sections, updating curriculum, improved hours for students, SLO assessment, as well as contributions to the department, the division, and the College, especially in technology and online course training.

Another source of success was the purchase of equipment for Microbiology, Bio 250 (Anatomy) and Physiology labs, plus a new ice machine that serves many courses. The new equipment will enhance SLO assessment, student success and retention, by allowing faculty to assign more student-directed investigations.

From 2008/2009 to 2010/2011 enrollment in Biology classes was unchanged, while college enrollment decreased by 6.3%. Health Science enrollment decreased 65% because it is no longer required for AA/AS degrees, and fewer sections were offered. Demand for online sections of Health Science remains high for pre-health profession students, and the department now offers two online and two standard Health Science sections, with the need for a third online for Fall 2012.

Biology has very high productivity, with Load increasing 5% from 2008/2009 to 2010/2011, to 703 (compare to College load of 576). From 2008/2009 to 2010/2011 College WSCH decreased 10.6% while Biology increased 3.6%. High demand continues in Bio 250 (Anatomy), Physiology and Microbiology for pre-health majors, and demand has been increasing for Biology majors (transfer). Bio 220, now a web-assisted class, with one lab session on campus and one online, is offered this Spring in two sections. Bio 210 will convert to web-assisted Fall 2012, so the department can offer two sections of Bio 210 each Fall semester and two sections of Bio 220 each Spring semester. The third course in the major sequence, Bio 230, currently accommodates students with a single section each semester. Bio 230, 240, 250 and 260 faculty worked with Skyline and Canada faculty to align prerequisites, and have submitted new course outlines for Fall 2012. Alignment will provide for prerequisite checking, which may improve student retention and success rates.

Demand for online courses continues to grow, with every added section filling early. Since the first online offering of Bio 100 in 2002, the department has increased to 16 sections in 2011/2012 for Bio 100, 130, 145, 310, and HSCI 100. More faculty are learning to teach online courses through district courses such as STOT I and II, as well as through external courses and mentoring by Biology faculty. The online biology teachers are meeting the challenges of retention and success that set online classes apart from traditional courses. The Biology department has developed a policy for staffing online classes (see goals) that incorporates a requirement for training and mentoring of prospective online instructors.

Biology department retention is 79% compared to 84% for the College, and success rate is 63% compared to 69% for the College. These rates have changed very little over

the past few years, fluctuating insignificantly from one semester to the next (Spring 2010 retention was 80% and success 65%). Both standard and online courses in the sciences present somewhat greater challenges for students than non-science courses. Faculty continue to pursue approaches that will improve student retention and success, both within the department and division, and with faculty in other disciplines. Assessment of SLOs is providing data and evidence that informs faculty about action plans to improve student success. Increasingly Biology faculty work with faculty from other disciplines and student services staff to develop strategies for student engagement and success (for example serving on committees to coordinate ISC and Learning Center and BSI committee). The department continues to develop networks between CSM and other institutions to help increase successful transfers to universities, and to engage in programs that allow collaboration and sharing of ideas about student success (see discussion of goal #4 in part 3 that follows).

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.

One of the major impediments to meeting the department's goals (#1, 2 and 3 from last program review) of student success, academic excellence and high-quality programs is the need to "scramble" each semester to staff all sections. Biology is a diverse field of study, and instructors generally specialize in only a few different courses, rather than the entire range of offerings of the department. Online courses present a new "specialization," since preparation and training is needed, as well as interest, to teach online. Adjunct units are limited, and qualified adjuncts are in demand throughout the Bay Area, so it is difficult to staff a semester's courses confidently and in a timely fashion. Scheduling itself is difficult, because adjunct availability varies, since most teach at multiple colleges. (For example some adjuncts may only be available on Tuesdays and Thursdays, so courses they teach must fit into classrooms on those days).

As part of Goal #2 in last program review (improving effectiveness of distance learning), Biology department faculty have developed a policy to make sure our online classes are taught with high standards. Biology faculty that are already teaching online classes have had extensive training in distance education and have worked collaboratively to develop and improve online classes. The department considers it important to be familiar with an instructor's teaching skills before assigning online classes, thus for now, a new instructor would need to be hired for a standard class before teaching online.

Qualifications a Faculty member must have to teach an online class in the CSM Biology Department:

Formal Training: Successful completion of either "Structured Training for Online Teaching" (STOT I) or the @ONE courses of both "Introduction to Online Teaching and Learning" and "Introduction to Teaching with Moodle" or equivalent training.

One semester to **Demonstrate use of WebAccess** to support a face-to-face class, using of the resources and activities listed below. This qualification is to be coached and assessed by a faculty mentor or mentors.

Proficiency in WebAccess Resources and Activities. The following list is not exhaustive but a basic list to prepare a faculty to teach an online class. Posting content: documents and news; Interactive activities: forums and chats, comments on assignments; Assessments: quizzes and assignments; Record keeping: Gradebook.

Ability to communicate online. During the semester of learning and demonstrating proficiency in WebAccess the mentors should monitor and coach the faculty in asynchronous communication and monitoring forums for content and participation and setting up rules for communication such as how fast emails are answered and commenting frequency in forums, assignments, etc.

Mentoring. One or more faculty with online teaching experience will observe, advise and assess new online faculty, and will be added to the course as non-editing faculty.

Several members of the biology department are part of a M/S Technology Committee formed last spring. The purpose of the committee is to help Math/Science faculty with training and other aspects of Distance Learning support. The committee organized and offered several workshops during the Spring semester flex day. The committee identified hardware and software needed by biology faculty to develop video podcast tutorials and to record live lectures. Students can access those tutorials and recorded lessons in the WebAccess class site. These additional learning tools should improve retention and success.

Online class size is an issue that still needs to be worked out. There is an extra level of work that makes it difficult to manage the same number of students as in a standard 60-student lecture course. Currently Biology is limiting enrollment to 45 unless the instructor individually wishes to take more.

Due to severe budget constraints, the problem of space and supplies for adding sections of Biology classes is currently moot.

Goal #4 of enhanced institutional dialogue and increased faculty participation continues to progress with biology faculty membership on the new Learning Center advisory committee, College Centers committee, BSI committee, District Distance Education Committee, and STOT I and II training, as well as continued participation in Academic Senate, hiring committees, etc., all while working longer teaching hours than other faculty on campus.

Additionally, biology faculty continue to participate in the Community College Biology Faculty Enhancement through Scientific Teaching, CCB FEST, partnership with SFSU, and in the state-wide faculty discipline group developing the Biology TMC.

There is also an initiative by biology faculty and the Math/Science Division to develop a STEM transfer program that partners CSM with other local colleges to improve transfer rates in STEM fields. This project, currently in development mode, will bring resources to the college that includes time for faculty collaboration, and participation in activities designed to enhance the learning community of Biology and STEM majors.

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.).

With increasing Biology faculty participation in the new campus Learning Center and with the BSI committee, the department will investigate development of new interdisciplinary projects to improve student success. This may include professional development projects. The biology department wants to continue to be a part of discussions and development of the campus labs and centers that now have the central learning center as their hub of support. It is hoped that advanced Biology students will serve as peer tutors for Biology students in both the Learning Center and in the ISC and the newly named Bio 250 (Anatomy) and Physiology Center (formerly known as Open Bio 250 (Anatomy) Lab).

The investigatory phase of the STEM initiative is being sponsored by Project Kaleidoscope, an Association of American Colleges and Universities project. It is hoped that external funding will be gained that supports the project for several experimental years.

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

The coming year will be one of cutting back, in the face of increasing student demands for growth, particularly in the allied health courses. However, even without growth, the department still is in need of a full-time Bio 250 (Anatomy) and Physiology instructor to staff existing classes and A&P Center, as well as the myriad of contributions noted above for the Microbiology instructor. Every semester, staffing of Bio 250 (Anatomy) classes is the final challenge in completing a schedule. The department will continue to request this faculty position until it can be accommodated by the college budget allotments.

Budget cuts may also impact the Anatomy and Physiology Center and ISC, if budget cuts take the funding from staffing. Full-time faculty generally donate their time to open labs, while adjuncts work for pay. That will not be possible in the coming year.

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

- a. 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.

This year the Biology department faculty wrote SLOs for all Biology degrees: AS Associate in Science Degree Biology; Biology: General; Biology: Biotechnology; Biology: Pre-Nursing; Biology: Medical; and for Biology Certificate of Specialization: Biotechnology. Coordinating with SLOAC the degree SLOs were edited and approved, and the college will develop questions to assess the degree SLOs at the time students apply for degrees.

The department continues to assess most SLOs in all our courses, and document these in TracDat annually. As a result of assessments SLOs for Bio 110 were rewritten for the Fall 2011 course outline update.

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 Bio 250 (Anatomy) and Physiology Instructor</p> <p>The demand for pre-health care courses is very high and growing. The department has responded by increasing the number of sections of Bio 250 (Anatomy) and physiology offered. The department offers 6 Bio 250 (Anatomy) and 3 physiology sections in each semester, fall and spring, and 2 Bio 250 (Anatomy) sections in summer. Although there are 3 full-time faculty teaching Bio 250 (Anatomy) and physiology, one has very limited units available to A&P. Bio 250 (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 A & P Center hours and office hours. Success and retention of students in microbiology, Bio 250 (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 Bio 250 (Anatomy) and Physiology instructor will collaborate with our skilled team of Bio 250 (Anatomy) and physiology instructors, teach several sections of Bio 250 (Anatomy) and physiology each semester. The instructor will help keep the curriculum updated, tend to students during A & P Center hours 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 Bio 250 (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: Digital Spectrometers Number: five Vendor: fisher scientific Unit price: \$942 Total Cost: \$4710 Status*: upgrade</p>	<p>The spectrometers we have are hand-me downs from the chemistry department. They are old, and often fail during experiments. Several lab sections used the spectrometers a variety of experiments.</p>	<p>Analysis of biological samples using adequate instrumentation is part of the training in the sciences. SLOs for BIOL 110, 220, 230, 260 can be better assessed, and student success in them is expected to improve with more student-directed investigations.</p>
<p>Item: Seagate Expansion 500 GB USB 3.0 Portable External Hard Drive STAX500102 Number: 2 Vendor: Amazon Unit price: \$89.99 Total Cost: \$223 Status*: new</p>	<p>The equipment is needed in the production of tutorials and recordings for online and web-assisted classes. If granted we will have top of the line learning materials for our students.</p>	<p>The production of educational materials to support learning in online and web-assisted classes will help with retention, and support different learning styles.</p>
<p>Item: Revolabs wireless mic Number: 3 Vendor: Amazon Unit price: \$199.99 Total Cost: \$750.00 Status*: New</p>	<p>The equipment will be used to record classroom lectures using Elluminate live. Recorded lectures will be available to students in WebAccess. If granted students will be able to review difficult concepts as presented in the classroom.</p>	<p>The production of educational materials to support learning in online and web-assisted classes will help with retention, and support different learning styles.</p>

<p>Item: Plantronics 77043-03 Spare Headset Assembly Calisto Pro Number: 2 Vendor: Amazon Unit price: \$53.99 Total Cost: \$135.00 Status*: New</p>	<p>The equipment will be used to for interactive online Elluminate live or CCCConfer sessions. Tutoring sessions and office hours that are held online need noise reducing microphones to eliminate feedback and reverberation sounds.</p>	<p>The production of educational materials to support learning in online and web-assisted classes will help with retention, and support different learning styles. These session can be recorded and provide options for students with different learning styles to attend live or view the recordings.</p>
<p>Item: Plantronics Bluetooth USB Adapter BUA-100 Number: 2 Vendor: Amazon Unit price: \$65.12 Total Cost: \$162.28 Status*: New</p>	<p>Supports Plantronics 77043-03 Spare Headset Assembly Calisto Pro</p>	
<p>Item: Sony Bloggie Digital video recorder Number: 2 Vendor: Amazon Unit price: \$139 Total Cost: \$347.50 Status*: New</p>	<p>The digital camera will be used to record lectures, and lab demos to be uploaded to WebAccess class site. If granted, students will be able to spend more time on task studying difficult lecture and lab materials.</p>	<p>The production of educational materials to support learning in online and web-assisted classes will help with retention, and support different learning styles.</p>
<p>Item: HDMI cable Number: 2 Vendor: Amazon Unit price: \$7.99 Total Cost: \$19.96 Status*: New</p>	<p>Supports Sony Bloggie Digital video recorder</p>	
<p>Item: Dragon Naturally Speaking Software Number: 2 (1 for PC and 1 for MAC) Vendor: Journeyed.com Unit price: \$159.99 Total Cost: \$400.00 Status*: New</p>	<p>This is voice recognition software. It will transcribe audio lectures and recordings and has been used for simple close captioning of short lectures.</p>	<p>This software supports the production of educational materials to support learning in online and web-assisted classes will help with retention, and support different learning styles.</p>
<p>Item: Camtasia Software Number: 2 (1 PC, 1 Mac) Vendor: Journeyed.com Unit price: \$278 Total Cost: \$347.50 Status*: New</p>	<p>Camtasia software creates screen effective videos that help to train and teach. It allows easy editing and merging of different formats and presents an interactive format to the viewer.</p>	<p>This software supports the production of educational materials to support learning in online and web-assisted classes will help with retention, and support different learning styles.</p>

<p>Item: Ipad 3 Number: 1 Vendor: Apple.com Unit price: \$699 Total Cost: \$873 Status*: New</p>	<p>The Ipad 3 is a tablet computer that can run Keynote presentations that include handwritten notes using a stylus. This will allow faculty to present and record full media-supported lectures for alternate delivery modes. Currently faculty can not record both notes and presentation slides during lecture.</p>	<p>This hardware supports the production of educational materials to support learning in online and web-assisted classes will help with retention, and support different learning styles.</p>
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**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: X6602; diamondk@smccd.edu
Full-time faculty: Kathy Diamond, Tania Beliz, Theresa Martin
(Also reading and comments by Laura Demsetz, Engineering faculty)

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