



Annual Update
Approved 9/2/08 Governing Council

This Annual update is due on March 25th of each year that your three year Program review and planning document is not due. Please email a copy of this to you Division dean, the VP of Instruction and the Academic Senate President.

1. What is the name of your Department and/or Division?

Biology and Health Science (Math Science Division)

2. List the names of everyone who participated in developing this annual update.

Kathleen Diamond, Tania Beliz, Theresa Martin, Carlene Tonini, Huy Tran

3. Based on the elements in your Annual Update Data Sheet (Provided by IRP to your dean) and goals stated in your most recent Program Review, please identify any key successes and challenges.

Enrollment in Biology and Health Science classes increased 4.6% from 2005/6 to 2007/8 and WSCH increased 12.3%. As the department reduced excess sections in Health Science and General Biology, it added sections in the 200 series of pre-health care courses, 240, 250, 260. The demand for pre-nursing and pre-dental courses continues to grow and the department has been adding sections as long as they fit into available classrooms and time frames useful to students. Straightforward projections for the next three years by the college expect a further 6.3% increase in enrollment and 17% increase in WSCH. This projection may be accurate considering current plans by UCs and CSUs to reduce their admissions due to the economic crisis. However due to the current budget constrictions on the number of sections offered, the department will not add more sections in Fall 09 than are offered Spring 09.

One of our long-term goals in the last program review was to explore the efficacy of hybrid courses (mixed online and on-site) for Bio 260 and other courses. This addresses some challenges in scheduling and staffing. The department has made this conversion for one Bio 260 section Spring 09 and all Bio 260 sections Fall 09. The department feels strongly that all lab courses need to have on-campus lab experiences for one unit (three hours/week). Courses that have 2 units of lab include Bio 260, 210 and 220. There are many developed lessons for online work that make it feasible to consider converting Bio 210 and 220 to hybrid sometime in the future.

The difficulty in meeting increasing demand for Bio 240, 250, 260 is a challenge that is accompanied by inadequate preparation of students who enroll in these and other Biology courses. Lack of preparation for 200 series courses usually involves missing chemistry or biology prerequisites. Lack of preparation for 100 series courses involves English reading and writing skills that are undeveloped. As we stated in our long-term goals in the last program review, we always work to develop and implement teaching methods in lecture and laboratory classes so that Biology majors and nonmajor students are motivated, challenged, and encouraged to actively learn science fundamentals and approaches to general problem-solving and analytical thinking, and to continue to improve student success and retention.

For students who have appropriate English skills, the department has been adding online sections of several courses: Bio 100, 130 and HSCI 100. This serves several segments of the community while easing scheduling problems in Building 36.

4. 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 reason.

The Biology department is on track for meeting the major goals set in the last program review, with the exception of hiring new full-time faculty. Goals of top importance in the 2007-8 program review were hiring of full-time microbiology and anatomy instructors. This goal has not been met and will not be met until the college provides for the positions. These will remain our top goals, for reasons outlined in our request for faculty positions below.

Next we identified the need to equip and supply the added sections of Bio 240 and 250, and provide supplemental instruction for Bio 250 students. Funds were obtained for resection of new cadavers, and instructors are paid for Bio 880, an open anatomy lab that meets both weekdays and weekends. The department has not yet scheduled Saturday Bio 250 classes but these are still being considered.

SLOs have been developed in all Biology and Health Science courses, and assessment is ongoing and partially complete in more than half of our courses, and has led to rewriting of some course SLOs. Coordination of Bio 110 sections and use of web-based course materials has been progressing and includes all Bio 110 instructors. Establishing online resources for all Biology classes, not just online classes, was another long-term goal in our last program review. As of Fall 08 all full-time biology faculty were using instructor websites or WebAccess to post course materials, including schedules, syllabi, lab exercises, study guides, etc. This has benefits for students and faculty, in addition to reducing paper waste from photocopying handouts, and students may have asynchronous access to course materials. Since biology faculty work to improve teaching methods and to develop more engaging, challenging laboratory exercises and other student assignments, it is extremely helpful to write individual labs for students to download. Full-time faculty have been working with adjuncts to encourage and assist in their use of WebAccess for students materials. Spring 09 many adjuncts began or continued to use online posting of materials for their classes. It is expected that all Biology faculty will use this venue by Fall 09.

Another goal the department is pursuing with the Math-Science division is providing support for the ISC so that students are not required to pay for its use. Biology faculty consider the ISC a college resource that should be stably supported by general college funds. Because of recent interpretations of hour-by-arrangement requirements, faculty can now get credit for serving in the ISC. The department hopes that this will increase the staffing of the ISC in Fall 09.

Implementation of a core Biotechnology course in coordination with Skyline and Canada has not yet been completed. Funded by a grant from the California Community Colleges Chancellor's Office, to enhance biotechnology career pathways, with Skyline College, San Mateo County ROP and San Mateo High School, participating, a consensus aligning biotechnology curriculum between high schools, ROP and community colleges was not finalized. The future of this endeavor is uncertain at this time, and the department may not consider this a priority in the next year.

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

One goal is to include the current nutrition class, CA & S 310 (consumer arts and science), in our biology sequence as Bio 310, submit the paper-work to committee on instruction, and offer the class in the online mode. Currently the class is offered as a TV class.

The department would like to coordinate with the division and the college instruction office to clearly establish policies and practices related to hour-by-arrangement, especially with regard to support and use of the Integrated Science Center, which has been a vibrant activity site on campus.

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

One of our critical issues is how to accommodate growth in biology and health-allied support courses in an environment of FTE caps. Our wait lists indicate that there is demand for more sections of some courses. How we accommodate that growth is a challenge to our physical facilities and to our FTE caps. Challenges need to be addressed at the institutional level through enrollment management in the case of what to do with wait lists, and at the VPI/instructional deans level in the case of FTE caps.

7. Student Learning Outcome and Assessment focus for this year:

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

The department has done extensive, detailed SLO assessment in almost all Biology and Health Science courses, and filed reports on all of them. Assessment includes pre-tests, post-tests, lab assignments, midterm exams, final exams, and questionnaires. Each instructor has quantitatively analyzed results for individual SLOs. Instructors in different sections of the same course have compiled data for summarizing, and some meetings have been held to compare analysis. Ongoing revision of SLOs and means of assessment occupy the time of all Biology instructors.

- h. Student services areas: TBD

8. **SUMMARY OF RESOURCES NEEDED TO REACH PROGRAM ACTION STEPS** (*Data resources: Educational Master Plan, 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 2 positions requested	Expected Outcomes if Granted and Expected Impact if Not Granted
<p>Request for Microbiology Instructor The demand for pre-health care courses continues to increase. The department has responded by increasing the number of sections of microbiology offered. In the last two years the department has doubled the offerings. Four sections are scheduled for spring 2009 and for fall 2009. This last spring and fall there were four microbiology (Bio 240) sections. These sections filled immediately and</p>	<p>If granted, the Microbiology Instructor will coordinate the microbiology program at CSM. He/she will teach the majority of the sections of microbiology. The instructor can keep the curriculum updated, tend to students during open lab and office hours, and keeps the program vibrant. They will be responsible for coordinating SLOs and assessment. They will work with the stockroom</p>

<p>generated waiting lists. The department expects another significant increase in demand with the new dental hygiene program. These students will be required to take microbiology as a prerequisite. There is currently no full-time faculty teaching this course since the retirement in 2005 of the full time instructor. In order to support both current and new program demands, the CSM microbiology program need to continue to grow. Microbiology is a highly specialized field that cannot be taught by a general biology instructor, unless he/she is retrained in the field.</p>	<p>technician to develop laboratory materials and coordinate purchases of supplies and equipment. They will contribute to ongoing biology department and school wide activities and initiatives.</p> <p>In the absence of a full time position in microbiology, the classes will continue to be staffed by adjunct instructors. Office hours will continue to be limited. The development of SLO's and assessment will continue to be handled by full time faculty without expertise in the field. The department will be without a vital contributor to the biology department and the campus community as a whole.</p>
<p>Request for Anatomy and Physiology Instructor It must be repeated: 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. This fall there are 6 Bio 250 (anatomy) and 3 Bio 260 (physiology) sections. These sections filled immediately and generated waiting lists. For spring 2009 the department will offer 6 anatomy and 2 physiology sections. Fall, 2009 may require another increase in sections since the new dental hygiene program at CSM will also require anatomy and physiology as a prerequisite. There are only 2 full-time faculty teaching anatomy and physiology as part of their load. As with microbiology, anatomy and physiology are specialized fields that cannot be taught by a general biology instructor, unless he/she is specifically trained in the field. It is difficult to staff these classes, since the majority of our applicants for part-time positions are not anatomists or physiologists. It is important to note that the quality of a program hinges in the full-time faculty member that can keep the curriculum updated, tends to students during open lab and office hours, and keeps the program vibrant. Growth and retention of our students in microbiology, anatomy, and physiology courses, and curriculum updates will be best served if we have full time faculty in these areas.</p>	<p>If granted the anatomy and physiology instructor will join our skilled team of anatomy and physiology instructors. They will teach several sections of anatomy and physiology each semester. The instructor can help keep the curriculum updated, tend to students during open lab and office hours. They will be help with coordinating SLOs and assessment. They will contribute to ongoing biology department and school wide 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 will be without a vital contributor to the biology department and the campus community as a whole.</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
<p>Swift M3501DF monocular microscopes . Number: 30 each. Vendor: Carolina Biological. Item# FA-59-5517. Unit Price: \$349.00. . Total Cost: \$10,470.00. Status*: upgrade</p>	<p>These microscopes would add to the existing scopes in room 36-217 and allow each student a scope during lab. Currently the students share scopes. These microscopes are used intensively in the anatomy, physiology, and principles of biology class. The use of microscopes is central to the training of biology and health allied students. Studying microscopic structures are an integral part of preparing good nurses, pre-med students, and all of our biology students.</p> <p>If granted we will be able to increase and continue to offer the high quality of instruction our CSM program is known to offer. If not granted in this funding cycle, we will ask you to fund our request in the future.</p> <p>We request that if 30 microscopes cannot be funded at once, that we are funded for 15 at this time, and for another 15 in the subsequent funding allocation.</p>	
<p>Funding for general supplies to support additional sections of biology lab in support of the nursing, dental, and transfer programs.</p>	<p>Expected outcome: support the high quality of instruction we offer in our science labs. Over the last three years, we have steadily increased our biology lab sections to keep up with the demands for nursing and other health allied fields. We are at a point that we really need an increase on our supply allocation just to be able to provide good lab materials to our students.</p>	
<p>Item: Anatomy lab: Additional costs for fetal pigs, preserved sheep brains and beef eyes, fresh lamb hearts and veal plucks, scalpel blades, lens paper, lab wipes, gloves for instructors, Carosafe preservative, and</p>		

<p>cadavers. Excluding cadavers, the cost per lab section runs about \$ 400. Cadavers are running us about \$3500 each.</p>		
<p>Items: Physiology lab: Additional costs for blood typing supplies, urinalysis supplies, Vernier disposable filters, electrodes, buffer solutions, chemicals, pH paper, dialysis tubing, microscope slides, sheep blood, lens paper, lab wipes, model building supplies, biohazard boxes, capillary tubes. Estimated cost per lab section \$ 600.</p>		
<p>Item: Microbiology lab: Additional costs for agar and broth, sterile petri dishes, stains, reagents, rapid ID materials, lens paper, lab wipes, immersion oil, test tubes, swabs, microscope slides, disinfectant, hazardous waste bags, bacterial cultures, droppers, anaerobic jar supplies, ELISA kits, sensitivity cartridges. Estimated cost per lab section for supplies alone is \$750. If we add more sections that we currently have, we would also have to consider purchasing another refrigerator to hold student projects (\$500), additional test tube racks (\$400 for 24), supply bins (\$50), anaerobic jars (\$300 each), and possibly more maintenance to the autoclave (@ \$175.00 per hour).</p>		
<p>Item: Toner cartridges for the printers in the biology labs. Number: 4 Unit price: \$100 Total cost: \$400</p>	<p>Students print data and reports generated by lab equipment. Reports must be included in their lab worksheets, as they are part of their scientific training.</p>	
<p>Resources Requested This is a list of material to be funded through lottery/software funds</p>	<p>Expected Outcomes if Granted and Expected Impact if Not Granted</p>	

Resources Requested This is a list of material to be funded through lottery/software funds	Expected Outcomes if Granted and Expected Impact if Not Granted	If applicable, briefly indicate how the requested resources will link to achieving department action steps based on SLO assessment.
Item: EKG sensors Number:: e each Vendor: Vernier. Item # EKG-BTA. Unit price \$150.00 each. Total price: \$450.00.	These sensors are to be added to our current stock so more groups can work at the same time.	
Inflatable lung model set of normal and smoker's lungs. Number: 1 Item # 14W8335. Vendor: Wards Science. Item # 14W8335. Price \$350.00.	To be used for comparisons of lung function between healthy and non-healthy lungs. Many students will benefit in the anatomy, health, physiology, general and principles of biology, and zoology class.	
Spirometer flowheads (physiology labs). Number: 9 Unit price: \$60.00 each. Vendor: Vernier. Item # SPR-FLOW. Extended price: \$540.00.	To add to our current set to make it possible for more students to work at the same time	
Assorted prepared microscope slides (for botany, anatomy, physiology, general biology, and microbiology). Note: we have an itemized list of these slides.	To upgrade our aging collection. From time to time, slides break and their materials in them fade. Slide preparations contain material that is critical for students to learn and understand tissues, sections of organs, and type cells.	

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

Kathleen Diamond
Primary faculty contact

March 24, 2009
Date

Tania Beliz, Theresa Martin, Carlene Tonini, Huy Tran
Additional faculty

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Date

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Date
