INSTRUCTION PROGRAM REVIEW: SPRING 2013 SUBMISSION CYCLE

Program Name: Biology & Health Science
Academic Year: 2012-2013
Faculty Contact: Kathleen Diamond
Program Review Submission Date: March 25, 2013

I. Description of Program

Provide a brief description of the program and how it supports the college's College Mission and Diversity Statements, Institutional Priorities, 2008-2013, 5 in 5 College Strategies, Spring 2011, and other institutional planning documents as appropriate.

The Biology department, including Health Science, offers courses serving a range of educational goals for students, including transfer to baccalaureate institutions for science and non-science majors, prerequisites for programs including nursing and medical assisting, and Health Science courses. The Biology program classes are conducted in lecture and lab classrooms on the second floor of building 36, with occasional lecture classes on the first or third floor. This academic year the department offerings total 45 sections each semester of 17 (Spring) or 18 (Fall) different courses (including HSCI 100). Eight (Fall) or Nine (Spring) sections of lecture courses are offered online, and 6 sections of lab courses each semester are web-assisted. The Biology department has seven full-time professors, eight adjunct instructors and one full-time lab technician. In addition to teaching classes, Biology faculty participate in national, state, district, and college committees. Biology faculty also participate in faculty inquiry groups, professional development activities that enhance teaching quality, innovation, interdisciplinary promotion of student success, all serving the college mission, especially addressing four Institutional Priorities: to improve the academic success of all students (including course completion, retention and persistence), to promote academic excellence (and improve transfer rates), to promote relevant, high-quality programs, and to enhance institutional dialog.

Biology faculty committee memberships include Academic Senate Governing Council, Basic Skills Initiative Support Committee, Learning Support Centers Coordinating Committee, Reading Apprenticeship Faculty Inquiry Groups, Math/Science Technology Committee, Committee on Instruction, College Safety Committee, College Sustainability Committee, Professional Development committee, District Performance Evaluation Task Force, District Distance Education Committee, and STOT I and II training. Moreover Biology faculty have more weekly teaching hours than faculty in non-science departments.

Additionally, biology faculty participate in the Community College Biology Faculty Enhancement through Scientific Teaching (CCB FEST) partnership with SFSU, the State Academic Senate STEM Academy, Leading From the Middle Academy, the Community College Success Network (3CSN) participation in the national Biology Vision and Change Initiative, and participation in AAC&U: Project Kaleidoscope, Ramping Up for STEM Success Initiative, and in the state-wide faculty discipline group developing the Biology Transfer Model Curriculum.

Biology faculty assess course SLOs, have aligned course SLOs to CSM General Education SLOs and established program SLOs. Faculty have current course outlines approved by COI using CurricUNET; some updates are results of collaboration with Skyline and Canada college on common prerequisites, allowing automatic prerequisite checking. Bio 230, 240, 250 and 260,

approved new course outlines for Fall 2012 with Bio 230, 250 and 260 prerequisites aligned with Skyline and Canada Colleges. Currently, Bio 240 is aligned with Canada college but Skyline has not aligned their prerequisites. Alignment will provide for prerequisite checking, which may improve student retention and success rates.

Biology faculty continue to participate in the state-wide discussions leading to the development and implementation of the Associate of Transfer degree in Biology AS-T, as mandated by SB1440. Biology faculty have also attended the Biotechnology All-Hands Meeting to discuss the Transfer Model Curriculum for Biotechnology. Our CSM majors' biology sequence will need minor adjustments this year to aligned Cell biology, General Botany, and General Zoology with the course descriptors the state system (community colleges and California State University faculty) is finalizing during spring 2013.

Biology faculty both manage and work in two student learning support centers: the ISC (Integrated Science Center, 36-110) and the A& P (Anatomy and Physiology) Center, 36-217.

Overall the Biology department is a vibrant, positive, successful member of the College community, with healthy student enrollments and a faculty that constantly strives to meet the challenges to student success. The strongest, most pressing issues for Biology are the need for more full-time faculty, better temperature and door controls in building 36; secondary but very important needs are for professional development opportunities and time, and the need to update and replace aging equipment.

II. Summary of Student and Program Data

A. Student Learning Outcomes Assessment

Summarize recent SLO assessments, identify trends, and discuss areas in need of improvement.

SLO assessment reviews continue to show that students have problems using quantitative information to evaluate and understand scientific processes. Students in Biology 260 have difficulty interpreting graphs, analyzing data from charts, working with basic measurements, and with proportions and ratios. Students also have problems relating information that has been successfully mastered in prerequisite courses. Chemistry is a prerequisite for physiology. The gas laws are taught in chemistry but students require extensive review in physiology before they can apply them to physiological applications. To address this problem, faculty is actively integrating quantitative problems into each unit of physiology.

In Biology 220, students struggle with the plant physiology portion of the class (water relations, photosynthesis) and with chemical composition of cells. The content and complexity of class materials make bio 220, and any of the biology majors classes demanding. Students that stay in the class pass the class with C or better. Few gets D or F. Students need to have good time management skills to get passing grades. They also need to have college level reading proficiency.

In Biology 240, General Microbiology, one of the SLOs is to learn lab skills appropriate to Microbiology. One of these skills is quantification. SLO assessment identified student difficulty with the necessary math and graph analytical skills. To address this problem, lectures on this material were flipped. A recorded video lecture was posted on WebACCESS for the student to view prior to coming to class, and then class time was used to work on homework

problems. A follow-up lecture was posted on WebACCESS to address issues that came up in class. This method seemed to meet with success, student did better than previous semesters on the relevant exam material and students reported enjoying this approach.

Although ENGL 848 is a recommended preparation, SLO assessment shows that many Biology 110 students have difficulties with written assignments, in particular proper sentence structure and knowledge of the English language.

Due to the nature of science courses, with frequent quantitative and objective in-class assessments of student learning (exams, quizzes and lab assignments), many Biology course SLOs are formally assessed in toto every three years. Thus trends may be observed in the classroom before they are reported as SLO assessment. Use of individually written lab exercises offered to students through WebAccess in lieu of commercial laboratory manuals provides for rapid turnaround between noting that students "didn't get it" and designing an improved teaching approach in both lecture and lab. For example, new and modified lab exercises have been introduced in Biology 110 and 230 in the past year, in response to students' struggles with SLO concepts.

Since many courses' SLOs were all assessed in 2010 they are due for assessment this Spring. Several Biology courses' assessments are out of date. One challenge is the assessment of courses taught only by adjunct faculty. The department needs to achieve SLO assessment of all SLOs for all Biology courses every three years, and improve oversight of adjuncts' SLO assessment work.

B. Student Success Indicators

1. *Review Student Success and Core Program Indicators and discuss any differences in student success indicators across demographic variables. Also refer to the College Index and other relevant sections of the Educational Master Plan: Update, 2012, e.g., Student Outcomes and Student Outcomes: Transfer. Basic Skills programs should also refer to ARCC data.*

Student success in Biology courses in 2011-2012 increased 2% from 2010-2011, from 64% to 66.2%, with retention also increasing 2%, from 79.8%-81.8% (or about 80-82%). This is a greater increase than the College in the same time (about 1%), but Biology success and retention are still about 4 percentage points below the College values. Both on-campus and online courses in the sciences present somewhat greater challenges for students than non-science courses. Biology faculty continue to pursue approaches that will improve student retention and success, both within the department and division, and with faculty in other disciplines. Of greater concern is the difference among under-represented groups in Biology compared to the College. Age and gender and most ethnic groups fall within the department's 4% difference from the College in success and retention, but Black, Filipino and Hispanic students have at least 10% lower success and retention in Biology than the College overall. This is one reason Biology faculty participate in College committees and professional development activities that investigate ways to improve student achievement.

Student success in biology online classes is slightly better than in the same classes offered in the traditional delivery mode. As a way to maintain the quality of our online offerings, the Biology department has an internal policy of staffing online classes with faculty that have participated in either STOT or other recognized online training. Given the challenges of online teaching, it is essential to have the same quality of instructors as in on-campus courses.

2. *Discuss any differences in student success indicators across modes of delivery (on-campus versus distance education). Refer to Delivery Mode Course Comparison.*

Student success in Online Biology and Health Science courses in Fall semesters of 2009-2011 averaged at 65.9% compared to 59.1% for the same courses offered in a traditional format with retention at 83.7% compared to 81.9% for traditionally offered courses. (Percent success is slightly higher for students taking online classes when compared with the same class offered in the traditional delivery mode: 62.1% compared to 52.3% in the traditional Bio 100 class; 67.4% compared to 58.7% in traditional Bio 130; and 67.9% compared to 64.1% in HSCI 100. Bio 145, Plants, People, and the Environment, and Bio 310, Nutrition, are only offered online, thus we do not have a traditional class to compare to the online offering.)

The ethnic profile of students taking online courses is about the same as in traditional courses but the total number of students in some ethnic groups enrolled in online sections is too small to offer a legitimate success and retention comparison with traditional courses. Because of the commitment to the success of all students these data will continue to be tracked. This is one reason Biology faculty participate in College committees and professional development activities that investigate ways to address student achievement.

Summary of Student Outcomes in Online and Traditional Classes (Fall Semesters 2009-2011)

Summary of Student Outcomes in Online and Traditional Classes (Fall Semesters 2009-2011)						
Number of Sections	Course	% Success			% Retention	
		Online	Traditional		Online	Traditional
15 Traditional, 4 Online	BIOL 100	62.1	52.30		76.5	80
6 Traditional, 3 Online	BIOL 130	67.4	58.70		91	80.8
11 Traditional, 5 Online	HSCI 100	67.9	66.40		86.2	84.9
3 Online	BIOL 145	58.3			82.3	
2 Online	BIOL 310	73.8			82.5	
	Average %	**65.9**	**59.13**		**83.7**	**81.90**

C. *Program Efficiency Indicators. Do we deliver programs efficiently given our resources?*

Summarize trends in program efficiency as indicated in the Student Success and Core Program Indicators (LOAD, Full-time and Part-Time FTEF, etc.).

Biology has very high efficiency, with a LOAD of 690 in 2011-2012 compared to the College LOAD of 531.7. Biology WSCH continues to rise while College WSCH decreases: up 4% versus down 6% from 2010-2011 to 2011-2012 (and Biology FTES rose though LOAD was slightly down in the same time period). The department continues to struggle to staff high-demand courses such as Anatomy with a shortage of full-time faculty.

High demand continues in Bio 250 (Anatomy), Bio 260 (Physiology) and Bio 240 (Microbiology) for pre-health majors, and in Bio 210 (Zoology) and Bio 220 (Botany) for Biology majors (transfer). Biology increased efficiency of scheduling and offering Bio 210 and Bio 220, by converting them both to web-assisted classes, with one lab session on campus and one online. The department offers two sections of Bio 210 (and one section of Bio 220) each Fall semester and two sections of Bio 220 (and one section of Bio 210) each Spring semester. Bio 230 now has its prerequisites aligned with Skyline and Canada and automatic prerequisite checking is in place, which will also improve efficiency.

Biology, Physics and Chemistry departments are currently working to coordinate scheduling of Biology major courses so that students will have stable scheduling over several years, and in a way that students can take all of their classes efficiently. Bio majors take a biology and a chemistry class each semester, plus physics and math, in addition to general education classes. We only offer one section of the biology majors classes, thus coordination with chemistry, physics, and math is essential for students to complete their transfer requirements efficiently. This will improve planning and transfer efficiency and success.

Demand for online courses continues to grow, with every added section filling early. More faculty are learning to teach online courses through district courses (STOT I and II) and approved external courses plus mentoring by experienced Biology faculty, some of whom teach for STOT training. The online biology teachers are meeting the challenges of retention and success that set online classes apart from traditional courses. The Biology department developed a policy for staffing online classes that incorporates a requirement for training and mentoring of prospective online instructors.

Percentage of full-time classroom teaching FTEF in Biology increased from 2009/2010 to 2011/2012 from 54.3% to 65.5% due to increased overload of full-time faculty. This year faculty are generally not doing overload, some have release time, and the percentage full-time is reduced. It is within the college range, and in both cases more full-time faculty are needed to achieve college goals of student success, academic excellence and high-quality programs, as well as institutional dialog.

D. *Course Outline Updates*

Review the course outline update record. List the courses that will be updated in the next academic year. For each course that will be updated, provide a faculty contact and the planned submission month. See the Committee on Instruction website for course submission instructions. Contact your division's COI representatives if you have questions about submission deadlines. Career and Technical Education courses must be updated every two years.

This year Biology 102, 195, 210 and 260 outlines were updated and approved by COI. Outlines for Biology 145 and 184 have been entered, but not completed, in CurricUNET; updates will be completed and submitted to COI before the end of spring 2013. All other course outlines are up to date.

E. *Website Review*

Review the program's website(s) annually and update as needed.

The biology website is maintained by the Marketing Department and biology faculty. It aligns with the template created for CSM and has recently added a short promotional video developed by a part-time faculty member and the Marketing Department. The website includes links to suggested course sequences for Biology majors, and links to current faculty projects, in addition to a Meet the Faculty Page, course descriptions, resources, and degrees and certificates.

Faculty contact(s)	Date of next review/update
Theresa Martin	Fall 2013

F. *Additional Career Technical Education Data – CTE programs only. (This information is required by* California Ed. Code 78016.) NA

III. Student Learning Outcomes Scheduling and Alignment

A. *Course SLO Assessment*

Explain any recent or projected modifications to the course SLO assessment process or schedule.

Faculty assess SLOs in their courses on a regular basis. The department is working to achieve SLO assessment of all SLOs for all Biology courses every three years, and meet the challenge of complete oversight of adjuncts' SLO assessment work.

B. *Program SLO Assessment*

Explain any recent or projected modifications to the program SLO assessment process or schedule.

Biology faculty aligned course SLOs to CSM General Education SLOs and established program SLOs in the past year. Program SLO assessment will be performed by questionnaires prepared by the Office of Planning, Research, and Institutional Effectiveness (PRIE).

C. *SLO Alignment*

Discuss how Course SLOs support Program SLOs. Discuss how Course and/or Program SLOs support Institutional/GE SLOs. Refer to TracDat related Program and Institutional SLO reports.

Each biology course SLO contributes to the program SLOs. Program SLOs serve as overarching goals for program students, and encompass the course SLOs. Program SLOs were written by finding common outcomes among the courses required in each program. Course and Program SLOs have been aligned to Institutional SLOs. Biology course SLOs readily align with the first three GE SLOs: Effective communication, Quantitative skills and Critical thinking. The detailed alignment of each GE and program SLO with Biology courses on TracDat is in-progress and will be completed this Spring. (The challenge has been managing TracDat when

there are older SLO that have been replaced by new SLOs. All are listed and the faculty working on alignment has been in conversations with SLOAC with regard to old versus new SLOs.)

IV. Additional Factors

Discuss additional factors as applicable that impact the program, including changes in student populations, state-wide initiatives, transfer requirements, advisory committee recommendations, legal mandates, workforce development and employment opportunities, community needs. See Institutional Research as needed.

As community colleges align their courses with the course descriptors developed by faculty groups implementing SB 1440, we expect that students pursuing transfer goals to the State University system will have a more transparent path to transfer. A more strict accounting on the number of units students take before transferring, and a clear listing of chemistry, biology, physics, math, and GE classes students must complete before transferring should expedite transfer readiness as long as students can be accepted to their desired CSU campus. Students pursuing transfer possibilities to the UC system will still have to use ASSIST (assist.org) for more guidance since transfer requirements vary between UCs and programs/majors. Student transfer agreements with UC campuses will not be affected by the implementation of SB1440.

At CSM the Biology courses are strongly articulated with UCs, CSUs, and private universities. As soon as the Biology AS-T is finalized, CSM Biology courses will be submitted for approval. Transfer Model Curriculum Course Descriptors for Anatomy and Physiology are being developed in two tracks. One track would not require any science prerequisite for the courses, while the other track would have science prerequisites. Currently both Biology 250 and Biology 260 at CSM have science prerequisites. The descriptor draft also requires 80% of the labs be hands-on labs. While this is not an issue for the Anatomy course, Physiology is currently taught as web-assisted with 50% of the lab being taught online. This model may have to be revisited as the descriptor becomes final.

Bio 220 (botany) and Bio 210 (zoology) are only offered at CSM. Revising and submitting our course outlines for COI approval should be a straightforward process.

Long term, as the Biology AS-T becomes institutionalized throughout the community college system, the Biology department may consider adding ecology and genetics courses so that we can offer the full array of biology courses listed in the Biology Transfer Model Curriculum. Before the first wave of drastic budget cuts in the early 2000s, CSM offered an Introduction to Genetics class on a regular basis. The department may consider offering a lab to accompany Bio 130 (Human Biology). Currently, students who complete lecture classes online have the option of coming to campus once a week to take a field biology class, Bio 195. Offering a human biology lab, possibly as an evening lab, would serve students who have taken online classes and can only complete a natural science lab by coming to school in the evening. A human biology lab could accommodate pre-health students in need of preparation for 200 level human anatomy and physiology classes. Adding additional courses to our current biology offerings would depend on hiring additional biology full-time faculty members, or recruiting more adjunct faculty. Our current full-time faculty are not able to cover all of the sections of regular and online classes we offer.

V. Institutional Planning

A. Results of Plans and Actions

Describe results, including measurable outcomes, from plans and actions in recent program reviews.

In 2011 the Biology department hired a full-time faculty for microbiology. This has stabilized course quality and added an active contributor to department, division and college initiatives, including committee memberships. The need is still very strong for a full-time faculty in anatomy and physiology. In July 2012, less than one month before the start of classes, faculty had to form an emergency hiring committee to replace an adjunct for Fall, to teach two sections of Bio 250 and help staff the A&P Center. It is important to reiterate that Biology is a diverse field of study, and instructors generally specialize in a few different courses, rather than the entire range of offerings of the department. Adjuncts' loads are usually maximized, and though adjuncts have high regard for the College, they will take a course in a more convenient location when it is offered (and of course a full-time position elsewhere). Meanwhile the department is expecting an Anatomy/Physiology professor to retire in the next couple of years.

More faculty are learning to teach online courses through district courses (STOT I and II) and approved external courses plus mentoring by experienced Biology faculty, some of whom teach for STOT training. The online biology teachers are meeting the challenges of retention and success that set online classes apart from traditional courses. The Biology department's policy for staffing online classes that incorporates a requirement for training and mentoring of prospective online instructors allows assignment of instructors to online courses with confidence in the quality of the course.

Biology faculty have responded to the college's documented need for enhancement of student success by becoming very active in initiatives directly promoting student success. Faculty have taken a proactive role to improve student achievement through BSI committee participation, BSI-supported Reading Apprenticeship training, ISC management, A & P Center management and staffing, Learning Support Center Coordinating Committee, CCBFEST participation, participation in the national Biology Vision and Change Initiative, and participation in AAC&U: Project Kaleidoscope, Ramping Up for STEM Success Initiative. The department has led efforts to adopt the 3CSN sponsored Reading Apprenticeship Program across the campus, and one faculty member is the new campus coordinator of Professional Enrichment through the Academic Senate.

B. Program Vision

What is the program's vision for sustaining and improving student learning and success during the next six years? Make connections to the College Mission and Diversity Statements, Institutional Priorities, 2008-2013, and other institutional planning documents as appropriate. Address trends in the SLO assessment results and student success indicators and data noted in Section II. Summary of Student and Program Data.

[Note: Specific plans to be implemented in the next year should be entered in Section V.C.]

To support Institutional priorities, especially to improve the academic success of all students (including course completion, retention and persistence), and at the same time to promote academic excellence (and improve transfer rates), Biology faculty actively pursue

approaches that will improve student retention and success for all ethnic groups.

The Biology department is deeply invested in learning and applying techniques that can stimulate student engagement in each Biology course, leading to higher levels and rates of success for all demographic groups. The proportion of the faculty who participate in college committees and initiatives to improve student success, while already high, will not just be sustained, but grow. The outside classroom hours devoted to professional development and curriculum enhancement that contribute to the same goal, also already high, will also grow. For this ambitious work and set of goals the Biology department requires more full-time faculty, more professional development support (including reassigned time to attend classes in plant biology and advanced online teaching--3 to 6 units--and substitute pay for participation in workshops), and more than 24 hours in a day (application will be made to Physics and Astronomy for help with this last goal).

As noted in Section II: Student success in Biology courses in 2011-2012 increased 2% from 2010-2011, to 66.2%, with retention also increasing 2%, to about 82%, making Biology success and retention about 4 percentage points below the College values. Of special concern is the difference among under-represented groups in Biology compared to the College. Age and gender and most ethnic groups fall within the department's 4% difference from the College in success and retention, but Black, Filipino and Hispanic students have at least 10% lower success and retention in Biology than the College overall. This is one reason Biology faculty will continue to participate in College committees and professional development activities that investigate, test, establish and possibly institutionalize teaching and learning methods that improve student achievement. This will include a long-term commitment to Reading Apprenticeship training and applications and related formal and informal faculty inquiry groups, or teaching circles, that stimulate experimentation with pedagogical techniques, a desire to transform the classroom and learning environment, and enhance interest in the scholarship of education; management and staffing of the ISC and Anatomy & Physiology Center,

Student success in biology online classes is slightly better than in the same classes offered in the traditional delivery mode. The Biology department's internal policy of staffing online classes with faculty that have participated in either STOT or other recognized online training will make sure we have the same quality of instructors in both classroom and distance teaching. Faculty participation in the Math/Science Technology Committee will continue to keep track of needed technological innovation for online course delivery and management.

1. *To guide future faculty and staff development initiatives, describe the professional enrichment activities that would be most effective in carrying out the program's vision to improve student learning and success.*

Biology faculty have found inspiration and stimulation from working with colleagues in other disciplines as well as fellow Biologists. Several Biology faculty attended the Reading Apprenticeship 3CSN workshop summer 2012 with Chemistry, Reading and English instructors. Since then a solid FIG has resulted, meeting twice a month to plan and compare initiatives in courses from three different departments. If professional development workshops are hosted by the College even more interdisciplinary collaboration may result.

Funds need to be provided to cover the costs of registration fees and travel expenses to attend conferences that help improve success and retention of STEM students, and further train faculty to implement Reading Apprenticeship in science classes. Substitute pay may also be required. Examples of professional development activities are:

- online teaching and learning conferences for advanced level training beyond that offered by STOT I and II.
- Participation in STEM related conferences similar to the February 2013, STEM Academy sponsored by the State Academic Senate.
- Participation in Reading Apprenticeship workshops.
- Participation in Vision and Change Initiatives
- Participation in CCBFEST.
- Participation in Project Kaleidoscope professional development and initiatives
- Leadership training and/or grant writing training in order to create STEM success initiatives with external funding
- Networking and participation in community college leadership groups such as State Academic Senate, 3CSN, WestEd, RP Group

2. *To guide future collaboration across student services, learning support centers, and instructional programs, describe the interactions that would help the program to improve student success.*

The department faculty will continue to work on and expand upon collaborative efforts with the other learning support centers. Alignment of services, and a shared vision for these services helps promote a culture of integrated service for students. Further collaboration with student services to help students receive non-academic support would also enhance student success. We are enjoying the dialogue that RA inquiry has generated across instructional programs, and we hope to continue and expand that dialogue to include reading, writing, quantitative skills, and other nonacademic skills such as growth mindset, interpersonal communication, time management, etc.

Therefore Biology faculty will continue their membership in the Learning Support Centers Coordination Committee, including participating in decisions about the Learning Center's functions, and mentoring and collaboration with LC staff in RA FIG (Reading Apprenticeship Faculty Inquiry Group). Biology faculty co-managing the ISC will propose more division engagement in its function and future planning. A&P center faculty will promote faculty staffing and ideally support for more paid hours. Biology faculty will continue participation in BSI (Basic Skills Initiative) Committee, which enhances awareness of college-wide issues of basic skills students and promotes initiatives in Biology (and sciences in general) to encourage basic skills students in our classes to succeed academically.

3. *To guide the Institutional Planning Committee (IPC) in long-range planning, discuss any major changes in resource needs anticipated in the next six years. Examples: faculty retirements, equipment obsolescence, space allocation. Leave sections blank if no major changes are anticipated. Specific resource requests for the next academic year should be itemized in Section VI.A below.*

Faculty:

We anticipate two retirements of full-time faculty in the next six years. One of these is an Anatomy and Physiology instructor, a position already in need by the department. The other is a General Biology (Bio 110) instructor. To allow for continuity in the quality of our programs, the biology department recommends we hire a full-time Anatomy faculty member within the next two years, and a second full-timer within the next five to six years. We have already been requesting a new Anatomy position for a long time but, over the longer-range a Biology 110 instructor with expertise in one other Biology specialty will be needed.

Equipment and Technology:

The department needs to replace computer carts for lab exercises; faculty computers in 4-5 years; assistance to all courses offered online and with web-assisted components; site licenses/access codes held by ISC/Learning Center for student online use; more Camtasia and Dragon licenses, wireless microphones for recording lectures.

Instructional Materials:

The department needs replacement and additional anatomy models, microscope slides (replacements and increases), cadaver replacement, camera for live projection of cadaver dissection and demonstrations, expand clicker use and increased provision for loaners by division. Adding a computer station for each lab and classroom so that faculty can bring a flash drive with their lectures rather than bring a computer to the classroom or lab room.

Classified Staff: 4T

The ISC is in need of funding for a 50% time staff person to help manage the ISC and provide assistance during peak use times by students. Currently there are times when the ISC is not open due to shortage in staffing.

Facilities: 4T

Long-term commitment to maintenance of teaching gardens is of critical importance to many biology classes. The teaching gardens on the East side of building 36 are used by several classes: Bio 102, 110, 195, 210, and 220. The gardens are the only mature habitat left on campus. The gardens have a variety of mature plant specimens representing many phyla and plant families. Some of the specimens are rare, and seeds or plants are not available for replacement. Students are able to conduct observations and studies of pollinators, birds, and plant morphology, phenology (seasonal cycles), and life cycles, in addition to data collection, in the safety of the campus gardens. The teaching gardens are also a source of botanical specimens for biology classes (branches, leaves, flowers, fruits, etc.).

Maintenance and replacement of classrooms items including seating, lighting, projector bulbs, shades. General environmental controls--temperature and humidity--are still a major problem in B36. Classroom and lab room doors slam with great deal of noise, interrupting class when students come and go into rooms.

Safety and security improvements: electronic locks on lecture rooms; ability to lock doors from inside. In case of a lock down, faculty are not able to lock the classrooms or lab rooms from the inside of the room. Phones in the classrooms and lab rooms were requested in the original

building construction requisitions as an important safety feature in case of emergency. During fire and lock down drills, there is no way to hear an alarm inside of classrooms or lab rooms. This is of particular concern in case of a fire; students and faculty could be trapped inside rooms if there is no floor monitor to alert them. Another concern, for security and fire-safety reasons, is that the building's outside doors often do not close completely. It would be of great value to have a general assessment of building 36 security conducted.

Plans and Actions to Improve Student Success

Prioritize the plans to be carried out next year to sustain and improve student success. Briefly describe each plan and how it supports the Institutional Priorities, 2008-2013. For each plan, list actions and measurable outcomes.

The Biology department is a vibrant, positive, successful member of the College community, with healthy student enrollments and a faculty that constantly strives to meet the challenges to student success. The strongest, most pressing issues for Biology are the need for more full-time faculty and better temperature and door controls in building 36; secondary but very important needs are for professional development opportunities and time, and the need to update and replace aging equipment.

1. Hire new full-time Anatomy instructor
2. Pursue serious attention by Facilities to problems in building 36, especially temperature regulation and security matters.
3. Continue training, recruitment and implementation of Reading Apprenticeship practices in Biology and College classes. Additional professional development activities for full-time and part-time faculty, including interdepartmental and interdisciplinary communication and collaboration and enhancing online curriculum development, especially related to improving success and transfer rates of underrepresented students.
4. Update and replace lab and technological equipment for better student achievement of quantitative skills and critical thinking activities in labs and online.
5. Better funding for A&P center pay for faculty staffing

Plan 1

Title:

Hire Full-time Anatomy Faculty

Description

Anatomy is an impacted course that is taken primarily by CTE students planning to apply to allied health programs such as nursing and physical therapy. A regular full-time evening instructor who can provide reliable reproducibility in the course is crucial considering that evening students cannot benefit from the A&P Center since they can't attend daytime hours. Anatomy has enacted a number of initiatives to promote student success and retention, including providing the faculty staffed A&P Center, introducing the Reading Apprenticeship program, maintaining an anatomy website. An additional committed full-time faculty is necessary to continue the development and expansion of these initiatives to promote student success.

In July 2012, less than one month before the start of classes, faculty had to form an emergency hiring committee to replace an adjunct for Fall, to teach two sections of Bio 250 and help staff the A&P Center. It is important to reiterate that Biology is a diverse field of study, and instructors generally specialize in a few different courses, rather than the entire range of offerings of the department. Adjuncts' loads are usually maximized, and though adjuncts have high regard for the College, they will take a course in a more convenient location when it is offered (and of course a full-time position elsewhere). Meanwhile the department is expecting an Anatomy/Physiology professor to retire in the next couple of years.

Action(s)	Completion Date	Measurable Outcome(s)
Hire full-time Anatomy instructor	2013-2014	Improve retention and success in Anatomy classes; improve readiness of nursing students

Plan 2

Title:

Building 36 temperature regulation and door security

Description

The temperature of lecture rooms, lab rooms and the hallways of building 36 varies seemingly randomly from floor to floor, day to day and week to week. Extremes of hot and cold are common all year round, unrelated to outside temperature. The outside building doors often do not close because of strong air currents blowing through the halls. Lecture room doors do not have electronic locks, and none of the classroom doors can be locked from inside. Together these are health and security issues that should be fixed for once and for all.

Action(s)	Completion Date	Measurable Outcome(s)
Pursue answers and solutions to the problems of temperature control.	Choose Year or Semester/Year	Reliable moderate temperatures in all rooms throughout the building
Pursue funding and planning for electronic locks on lecture rooms and for inside locking mechanisms	Choose Year or Semester/Year	Safety drills will show that classrooms may be safely locked without faculty exiting the rooms

Plan 3

Title:

Reading Apprenticeship expansion and institutionalization plus other professional development funding and opportunities

Description

The Reading Apprenticeship (RA) Program is a professional development program sponsored by the California Community College Success Network (3CSN). The 3CSN organization trains and supports faculty in initiatives that have been shown to enhance student success. Reading apprenticeship is a classroom intervention that is done by faculty in different disciplines in order to enhance the reading skills of students in their discipline. For the instructor, RA offers a support network of professionals who are also using RA in their classes. CSM faculty have been to training workshops, and have formed a Faculty Inquiry Group (FIG) that meets regularly during the semester to discuss the pedagogy and best practices. In addition, 3CSN supports outcomes research around the pedagogy. CSM faculty are assessing their practice and the effects on student success in a recursive way, so that future efforts can be improved.

RA leaders at CSM have reported and/or demonstrated the basics and techniques of RA to the CSM campus community (flex day January 2013), various committees including IPC (Institutional Planning Committee). Grants supported attendance of several Biology faculty at a three-day RA workshop in 2012 and release time for continued work Spring 2013. Future work includes more training in summer 2013, preparation and presentation of an RA flex day activity Fall 2013, and further dissemination of techniques, mentoring and establishment of FIGs for expansion of RA at the college.

Additional professional development activities for full-time and part-time faculty, including enhancing online curriculum development, interdepartmental and interdisciplinary communication and collaboration especially related to improving success and transfer rates of underrepresented students. Most of the biology faculty, including full-time and part-time, utilizes the District's WebAccess course management system to some extent from posting course material to fully online courses. Continued training in online teaching and emerging technologies is necessary to help the faculty improve student success through the use of theses technologies.

Action(s)	Completion Date	Measurable Outcome(s)
Continued participation in FIG, professional development activities including attending workshops, giving presentations and mentoring College faculty		Increase in RA activities in Biology and non-Biology classes, achievement of higher retention and success rates
Participation in other professional development activities and FIGs	Choose Year or Semester/Year	Achievement of higher retention and success rates of underrepresented students
4T		4T

Plan 4

Title:

Update and replace lab and technological equipment

Description

Necessary lab and technological equipment provides for better student achievement of quantitative skills and critical thinking activities in labs and online.

Action(s)	Completion Date	Measurable Outcome(s)
Purchase new computers and software for lab and online courses	Choose Year or Semester/Year	Consistent quality of lab and online courses for high academic standards

Plan 5

Title:

A&P center pay for faculty staffing

Description

Seek better funding for A&P center pay for faculty staffing

[Note:

Action(s)		
Pursue sources of funds to pay for more faculty hours in the A&P Center	Choose Year or Semester/Year	Increased hours available to students resulting in higher rates of retention and success in Anatomy and Physiology

Itemize in Section VI.A. Any additional resources required to implement plans.]

VI. Resource Requests

A. Itemized Resource Requests

List the resources needed for ongoing program operation and to implement the plans listed above.

Faculty

Full-time faculty requests (identify specialty if applicable)	Number of positions
Anatomy and one other Biology field: Physiology, Microbiology or General Biology (Bio 110)	1

Complete Full-Time Faculty Position Request Form for each position.

Description of reassigned or hourly time for prioritized plans	Plan #(s)	Cost
Professional development time to attend semester long courses in plant biology, and advanced online teaching and learning.	3	3 to 6 units reassigned time.
Substitute pay for participation in STEM, RA, XXX workshops	3	varies

Equipment and Technology

Description (for ongoing program operation)	Cost
Replacement of 1 Mac and 1 PC computer cart (2 carts with 15 laptops each, 30 @ $1300) Physiology: to run vernier labs measuring ekgs, muscle strength, respiratory volumes; current computers' interference and capabilities are inadequate; Anatomy, Botany, Zoology online exercises	$39,000
Tablet computers (2 @ $750 + stylus $20)	$1540
Two wireless microphones (2 @ $250)	$500
One set of 60 iclickers (60 @ $42)	$2,520
Dragon Naturally speaking (2 additional licenses) (2 XPC version $200)	$400

Camtasia (2 additional PC licenses @ $299	$598

Description (for prioritized plans)	Plan #(s)	Cost
Update and replace lab and technological equipment for better student achievement of quantitative skills and critical thinking activities in labs and online.	4	$44,558

Instructional Materials

Description (for ongoing program operation)	Cost
Replacement of prepared microscope slides. Cost per slide varies, average value $10 per slide.	$1000.00
New and replacement Anatomy and Physiology models Type II Diabetes Model ($145.00) Digestive tract model ($843.00) Child ear model ($649.00) Colon model with pathologies ($73.90) Fetal development model ($170) Histology of the small intestine model ($649.00) Obesity Model ($106.00) Liver Pathologies Model ($72.45) Osteoporosis Model ($329.00) Basic Skin Health Model ($75.15) Human Kidney, Nephron, and Glomerulus Model Set ($660.00)	$3772

Description (for prioritized plans)	Plan #(s)	Cost
Update and replace lab and technological equipment for better student achievement of quantitative skills and critical thinking activities in labs and online.	4	$4772

Classified Staff NA

Facilities

For immediate or routine facilities requests, submit a CSM Facility Project Request Form.

Description (for prioritized plans)	Plan #(s)	Cost
Building 36 temperature regulation and door security	2	tbd by Facilities

B. Cost for Prioritized Plans

Use the resources costs from Section VI.A. above to provide the total cost for each plan.

Plan #	Plan Title	Total Cost
1	Hire full-time Anatomy faculty	tbd
2	Building 36 temperature regulation and door security	tbd
3	RA expansion and other professional development	tbd
4	Update and replace technology and equipment	49,330
5	A&P Center funds	tbd