Department Update

1. **Describe the opportunities, successes, and challenges your department experienced during 2012-2013. Include in your description a discussion of the plans, strategies, activities and/or processes implemented to address issues within your department.**

Biosciences Department success and developments:

Our classroom approach is progressive and responsive to student needs, and our faculty and staff have current training in up to date classroom delivery technologies and teaching techniques for better student engagement and assessment. All our faculty have incorporated more than one instructional technology in their curriculum or teaching delivery including; LessonBuilder, Student Response Systems, Jing, Wikis, Panapto, Podcasting, Blackboard, Canvas, and Smartboards. Of our eight full time faculty, three have completed Master Teacher training, Robin Cotter becoming a Master Teacher trainer. All of our full time faculty participate in Professional Learning Communities. To further advance department initiatives for student-centered approaches to teaching and learning, we have and continue to successfully garner grants for student academic support efforts. Our faculty commitment to student success and science teaching is further evidenced by the fact that four full time faculty, Mickie Bond, Philip Pepe, Robin Cotter, and Patricia Finkenstadt, have been awarded Distinguished Teaching Awards. Every year one or more of our full time and adjunct faculty are nominated for this award. Dr. Jon Hayashi honed teaching skills by attending the 2012 Master Teachers’ Course in Sedona and participated in MCCCD Mosaic seminar offered at Maricopa. Jon taught 202 at Mesa Community College and received recognition as Outstanding Adjunct Faculty in 2012.

Our support staff are invaluable assets to our department operations and service to students. Our lab manager, Josh James, and administrative assistant, Dijana Music, have completed the Navigate Maricopa advanced training program for employees that choose to obtain advanced training in MCCCD management and operations processes. All full time department support staff are an active part of our department S-STEM grant whose role is to mentor and oversee the work of ten student interns as well maintaining a high-level of performance of their staff jobs.

Our faculty member, Amanda Chapman has taken a lead role in advancing student STEM education by authoring a National Science Foundation S-STEM grant that was awarded mid-year in 2012. This grant awards STEM students with stipends that allow them to work as STEM interns developing, implementing and presenting science projects. What effects the success and advancement of most community college students interested in STEM are their basic financial needs. Thus, the grant proposes to substitute non-profession building employment with paid work in STEM to advance their experience while maintaining financial support.
Challenges to enrollment:

Biosciences enrollment trends have always been strong as we offer classes for general education requirements, science majors, and health care program prerequisites. However, we have significant institutional obstacles to enrollment. The most significant challenges to enrollment in biosciences classes have been long term understaffing of full time faculty, work load limits on adjunct faculty, increasingly poor class scheduling services, and limited lecture and lab classroom spaces.

As a result of years of continuous full time faculty understaffing and a MCCCD policy limiting the work load of part time faculty, we experience great difficulty maintaining a large enough teaching workforce to cover course offering demands. Bioscience adjuncts can only teach one lab science course at one campus each semester. This limitation is exacerbated by the fact that there are nine other MCCCD biosciences departments competing for the same pool of faculty.

Another obstacle to biosciences student enrollment has been a significant and repeated level of class schedule errors. Departments submit future schedules and schedule changes to a scheduling service on campus. These new schedules and changes to existing schedules are then put into the campus student information system. Over the past couple of years, for each future schedule and existing changes we have submitted, more than 30% of these changes have been incorrect or neglected. Further, our class fees have been repeatedly changed or omitted by class scheduling personnel as a result of their incorrect records or poor processes. As open student enrollment begins for each semester, scheduling and course fee errors have created confusion for students and a huge amount of repetitive work for the Department Chair and support staff including significant loss of course revenues. Consequently, all Biosciences faculty are asked to carefully review their future schedules repeatedly during each semester as we identify a significant number of errors each time the schedules are reviewed. After numerous meetings to improve processes requested by college administration with scheduling personnel to solve errors and negligence, no substantive improvements have occurred.

Trend Data for Classroom Size and Room Utilization:

Biosciences at Phoenix College are efficient stewards of classroom space. Our class sizes and utilization of classroom capacity have been significantly greater than the average classroom on PC campus. Large class sizes create a high student to teacher ratio. MCCCD and all community colleges promulgate small classroom environments with more instructor interaction and support for greater student success and retention. Biosciences have consistently applied for more full time faculty to help decrease our student to faculty ratio but have been unsuccessful and thus have had a long history of being one of the highest understaffed disciplines at PC.

The average lecture and lab class size for Biosciences at PC is about twice the number of students compared to the Phoenix College class average sizes.
2. Identify the department goals and/or objectives developed for 2012 – 2013 and discuss progress to attain these goals and/or objectives. Include information about strategies/activities that improved or strengthened student success (retention, persistence, completion).

Our approach to student success continues to be progressive and responsive to student needs, and our faculty and staff have current training in up to date classroom delivery technologies and teaching techniques for better student engagement and assessment. All our faculty have incorporated more than one instructional technology in their curriculum or teaching delivery including; LessonBuilder, Student Response Systems, Jing, Wikis, Panapto, Podcasting, Blackboard, Canvas, and Smartboards. Of our eight full time faculty, three have completed Master Teacher training, Robin Cotter becoming a Master Teacher trainer. All of our full time faculty participate in Professional Learning Communities. To further advance department initiatives for student-centered approaches to teaching and learning, we have and continue to successfully garner grants for student academic support efforts.

Over the past several semesters we have instituted a student tutor program that is comprised of past students that were successful in the course or courses for which they are selected to tutor. One tutor program offers open tutoring availability at various times during the day each day of the week for regular or drop-in service to students. Supplemental instruction is an additional tutoring program that employs successful student completers that then return to class for more advanced notes and class training. The trained tutors then offer supplemental instruction immediately after each lecture and lab to further facilitate learning in students that are achieving a C grade or lower.
To advance students entering STEM careers, Amanda Chapman, a biosciences faculty, has been awarded an NSF grant whose goal is to immerse student awardees in paid bioscience lab internships. Student interns must develop projects with hypotheses, predictions and outcomes using appropriate lab techniques and then formally present their entire project at science competitions. Our staff, Joshua James, Matt Haberkorn and Dijana Music have been essential to the success of the internships as they provide logistics and student mentoring and oversight as per the grant requirements.

3. Identify your department plans for the 2013 – 2014 academic year. Include relevant information concerning your focus on student success, emerging issues or trends that could impact programs/enrollment/retention, etc., potential opportunities or issues/challenges, essential collaborations, and resource needs. Describe how your plans align with College initiatives and strategic planning.

The Biosciences Department will continue in our programs and efforts to support student success through our existing activities detailed in the prior report section #2. We are continuously looking for opportunities for support of our teaching to student success. We will continue to identify internal and external funding sources, new teaching technologies and progressive approaches to teaching to student success.

As a result of years of continuous full time faculty understaffing and a MCCCDD policy limiting the work load of part time faculty, we experience great difficulty maintaining a large enough teaching workforce to cover course offering demands. Bioscience adjuncts can only teach one lab science course at one campus each semester. This limitation is exacerbated by the fact that there are nine other MCCCDD biosciences departments competing for the same pool of faculty.

Operations and campus services are essential to the execution of faculty efforts and projects for improving student success. Campus technology and facilities operations have always been and continue to be very helpful and supportive in our needs and activities toward student success. Most challenges to our efforts to student success have been campus scheduling services that do not align with the effective practice of course delivery as they are ponderously bureaucratic and create obstacles to the rapid and error-free delivery of updated course schedules. There are numerous unfortunate examples including changing course fees without consultation with our department, changed course fees during active student enrollment creating student confusion and unnecessary campus reimbursements, and applications made to change course fees to our Governing Board with no consultation with our department. The consequences of such a draconian actions resulted in college administration requiring many meetings to help this service with error corrections and the loss of course fee revenues essential to course operations. We have not experienced any significant difference in service from many meetings and trainings over the past year.
4. Please identify the CCSSE benchmark(s) your department focused on during the 2012–2013 academic year and discuss the plans, activities, strategies implemented to improve in the areas you named.

The CCSSE survey focuses on classroom practices and student behaviors that relate to student engagement and are correlated with student learning and retention. Benchmark results relate to five areas of educational practice that include: Active and Collaborative Learning, Student Effort, Academic Challenge, Student-Faculty Interaction, and Support for Learners. The CCSSE survey results for the Biosciences Department in 2011 are taken from one lecture of Introductory Biology for majors (BIO 181) with N = 33. The prior CCSSE completed for Biosciences was in 2006 from the same course, BIO 181 lecture, with N = 35. CCSSE benchmark data showed that the PC Biosciences course measured compared equal to or greater than Phoenix College, all colleges within MCCCD and large comparable colleges nationally. Overall, the mean differences with comparable institutions indicate that Biosciences student engagement at PC is higher than that of the average for Phoenix College and comparable institutions. The Active and Collaborative learning assessment comparison shows that BIO at PC is equal to all other measured institutions.

Our strategies to increase student engagement and success include many aspects of the learning environment. Students benefit from a continuous level of communication and feedback about their performance and grade status in class. One basic approach by PC BIO instructors is updating students with their current grades on a constant basis. Students also benefit from the in-house tutoring offered by our department from adjunct faculty and students that successfully completed the course they tutor. Further, all instructors employ several in class and online technologies to engage students in activities that increase their success in class.

Improving the quality of student academic support, content delivery and the training of our students in science-specific skills is a fundamental strategy and goal of Biosciences at PC. In the lab sciences, we have additional challenges of providing student support in technical and analytical writing and reading skills, mathematics and the understanding of data and data analysis. Many of our students are not prepared for college-level lab science classes and have the additional burden of work and commitment to dependents outside of their educational and career-goals thus impeding their success and persistence. Our goal is to continue to improve on student accessibility to academic support and the development of class work activities that are flexible using online delivery modes.

Please refer to the Department Update section #2 for plans, activities, strategies implemented for improving on CCSSE identified benchmarks.

Student survey trends:

Surveys of faculty by their students is an important measure of the learning environment from the student perspective. All Biosciences students are given student surveys of faculty every semester. The Biosciences Department evaluations consistently contribute to
about 11% of campus evaluations. Three different surveys are given, one for face to face lectures, one for lab classes, and another for online versions of our courses since the student activities and approaches in lecture and lab are different. In the Fall of 2012, our online faculty have developed an online specific student survey of instructors and it will take several semesters of evaluations to accumulate meaningful data. Over the past six years BIO lecture evaluation results have been consistently high with no significant changes over this period. BIO lecture evaluations have been similar to the overall campus evaluations over this same time period with BIO rating above the campus average in five of the ten measured semesters. The survey averages are from twenty questions that refer to six factors for students to rate on a scale from zero (lowest) to five (highest). These sections of measure include: Course Assignments, Course Objectives, Instructor Commitment to Student Learning, Instructor/Student Interaction, Testing and Preparation and Organization.

In 2011, the Biosciences Department created a student survey to evaluate faculty in lab class since the lab classroom environment and lab specific activities were not represented in the existing survey. We first implemented this survey in the Fall 2011 semester and thus have only one semester of data. Although there are no other lab class surveys on campus, the average BIO lab evaluation rating is 4.66 as compared to the ten semester BIO lecture average rating of 4.53 and campus average of 4.47. Students report that teaching and activities in lab are effective and that safety considerations are appropriate. It will take several semesters to
acquire meaningful trend data however 4.66 out of 5 indicates positive feedback from students covering sixty lab section evaluations.

The BIO lab surveys have nine questions rated on a scale from zero (lowest) to five (highest) similar to the lecture evaluation scale. These questions are:

1. Instructor is prepared for lab activities.
2. Instructor is effective in teaching laboratory activities.
3. The instructor uses lab time effectively.
4. Instructor shows students how to effectively use lab equipment and supplies.
5. Instructor presents the safe use of equipment and supplies and safe disposal methods.
6. Instructor effectively utilizes visual aids, handouts, and technologies to support student understanding and learning.
7. Instructor effectively interacts with students during lab activities.
8. Instructor monitors the progress of lab activities.
9. Laboratory activities support concepts learned in lecture.

1. Course instructions are clear.
2. The material and concepts in this class are interesting to me.
3. The assignments help me to learn.
4. I can easily find when my assignments are due and how they will be graded.
5. I know where I should focus my studying for each quiz or test.
6. I receive prompt and helpful feedback on my assignments.
7. I can easily track my progress and my grade.
8. My teacher encourages me to pose questions.
9. My teacher is available and helpful.
10. Interacting with my teacher is useful to me.
11. I would recommend this teacher to fellow students.
Core Planning Areas

Access to Learning

1. Discuss the activities and strategies implemented by your department during the academic year 2012 – 2013 to increase learning opportunities through alternative delivery methods in order to improve retention and student support for learning.

The Biosciences Department faculty have steadily been working on creating fully online and hybrid versions of each course offered. As of this year there are only a couple of classes that do not have fully online version, BIO 181, 182, and 205. These are majors course that have face to face real laboratory meetings and student activities that cannot be substituted by vicarious lab work. Our continuing goals every year includes the employment of instructional technologies in and out of the classroom curriculum. Biosciences faculty are known by the campus IT Department for always pushing the limits of classroom teaching technologies. Some of these applications include LessonBuilder, Student Response Systems, Jing, Wikis, Panapto, Podcasting, Blackboard, and Smartboard.

One of our faculty, Jim Neuenfeldt, teaches entirely online courses. In addition to teaching, Mr. Neuenfeldt has been involved in the redesign and development of multiple online courses for the Biosciences Department. By utilizing the current best practices for online content delivery and collaborating with the Center for Teaching, Learning, and Technologies (CTLT), all online courses being taught by Mr. Neuenfeldt have been redesigned to take advantage of the robust feature set found in Instructure’s LMS, Canvas. This includes BIO100 online, BIO108 online, and BIO156 online for which Mr. Neuenfeldt also provides design and instructional support to adjuncts teaching these courses. In addition, Mr. Neuenfeldt developed and piloted a new introductory genetics course (BIO 240) online with Mark Rosati.
This past year the department offered BIO201 and 202 in a hybrid format. BIO 201 was offered in the fall and spring, while BIO 202 was offered in the spring. The intent of these classes was to provide something beyond what is traditionally thought as an online course: the opportunity for significant student-student and student-instructor interactions, the inclusion of discussions on a variety of relevant topics, and the incorporation of non-exam based assessments. By offering a hybrid format for these courses, PC Biosciences targeted a population of students who desire a more flexible course design than that offered by a traditional face-to-face format. Furthermore, a hybrid A&P course offers a perfect blend of student-driven, instructor guided lessons and hands-on technical expertise that positions students to be successful in an allied health career. With the development of the hybrids, it also provides flexible and unique scheduling opportunities as the Biosciences Department is offering both courses in a single semester as an 8-week sequential (BIO 201 followed by BIO 202).

Dr. Robin Cotter, Dr. Patricia Finkenstadt and Ms. Amanda Chapman all use a number of classroom technologies including Second Life simulation for microscope use, Google sites for collaborative writing and data reporting for lab activities, case-based learning in lecture and lab sections, SoftChalk LessonBuilders, interactive white boards to increase student engagement. Student clickers are used in sections of BIO 181, 160, 201, 202, and 205 lectures to also increase student engagement.

Our introductory biology for majors, microbiology and anatomy and physiology courses have implemented a supplemental instruction (SI) program employing student assistant for to enhance student learning. Students that apply must have recently completed the course with an A or B grade for which they are assisting. These successful students then attend lecture and lab obtaining more advanced notes and class training then offering after class supplemental instruction to students that attend.

During Fall 2012 and Spring 2013, students enrolled in BIO 181 had the opportunity to work with a Student Assistant (SA) attends lectures and labs in order to facilitate study sessions outside of class time several times a week. Attendance to these sessions was mandatory for students who had fallen below 70% at any given time during the semester. During these sessions with the SLA tutor, students discussed and worked on material that required time and attention outside of class. SA sessions are designed to help students master course content while learning new skills and strategies that will be valuable throughout their education. The program is an avenue students can pursue for assistance with comprehension of lecture and lab course materials, and it has been proven to increase student success and retention by about 40%.

2. Identify academic scheduling changes made by your department in 2012-2013 to increase access to courses and programs (e.g. 8-week sessions).

In Fall 2012, our Administration approved the renovation of an existing campus building to be used for faculty development and classrooms. The Biosciences Department was approved for
two lecture classrooms and one lab classroom. These rooms will be available for use for the Fall 2013 semester. The new rooms will allow us to convert an existing lab classroom from a 16 week prep to two 8 week preps. Students will now be able to complete the two 16 week anatomy and physiology sequence BIO 201 and BIO 202 in half the time or in one semester.

Additionally, we continue to add alternative course delivery options for each course offered. Important alternative deliveries include hybrid delivery (lectures entirely online and face to face labs), and entirely online versions of courses.

3. If your department provided civic, political, and global learning opportunities (e.g. service-learning) please describe the activity and identify the numbers of students who participated.

The Biosciences Department participated in the 2nd Annual Food Day on Oct 24th 2012, by hosting the Garden Club Plant Sale and Information table, several dozen students interacted with club members and club advisor Dr. Elena Ortiz at the Food Day event and learned about edible gardening and composting.

The Biosciences Department also participated in a STEM program recruitment event called “Ask me about STEM” on April 8th, 2013, we provided microscopes and live plant and insect specimens to view out in Sophomore Square, Dr. Elena Ortiz and Joshua James provided expertise and interacted with approximately 20 students, teaching about the specimens on view.

The department also participated in Earth Day activities. Dr. Elena Ortiz hosted a film screening and post film discussion of “Watershed: Exploring a New Water Ethic for the New West” attended by approximately 30 students, staff and community members on Monday April 22nd 2013. A second event as part of Earth Day was a Garden Club Plant Sale and Information table on Wednesday April 24th 2013; several dozen students interacted with club members at the Earth Day event and learned about edible gardening, composting and seed saving.

In the Fall of 2012, Dr. Ortiz's Honors section of Bio 108 (Plants and Society) worked with PC's Culinary Program to design a garden plan to provide produce for the Culinary Program. In the process they learned about the environmental and social issues associated with local food, problem solving and working with a client to achieve a desired result. The Honors class consisted of 16 students.
Effective Teaching and Learning

1) Please complete the attached Annual Assessment Results Report template for the assessment category completed by your department.

These assessments will use the rubrics developed by the respective assessment committees and be recorded using the Assessment Database. For the Fall 2013 semester, the department will focus on a formally assessing Information Literacy. This assessment will involve several different bioscience sections including BIO 202 and BIO 108 with other possible sections to be included. The specific assessment will vary between different sections but they will all follow the guidelines set forth by the information literacy committee. Below is an “Annual Assessment Results Report” for 2012-2013 illustrating a formal assessment of information literacy in BIO 108.
<table>
<thead>
<tr>
<th>General Education Outcome</th>
<th>Assessment Methodology</th>
<th>Assessment Results</th>
<th>Use of Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Literacy: Competency #5 – Students should demonstrate an awareness and understanding of basic copyright and intellectual property laws and accurately represent the work of others</td>
<td>An Information Literacy pre- and post-test was administered to biology students in two sections of BIO 108 during the Spring 2012 semester. There were a total of 91 students in the sample. Students received library instruction on how to cite sources and completed a research paper. They submitted a rough draft of the paper to SafeAssign a plagiarism detection service. The post-test was administered after the final draft of the paper was submitted and graded. Limitations: this was a convenience sample using two sections from the same instructor, not all students answered all questions, and not all students took both the pre-test and post-test.</td>
<td>A repeated measures t-test was calculated to determine if there was a difference in pre-test and post-test scores. The average score on the pre-test was 3.23 (SD = 1.19) and the average score on the post-test was 3.75 (SD = 1.19). The possible scores ranging from zero to six. The t-test revealed a significant difference between the post-test and pre-test scores, t(39) = 2.93, p = .01. There was also a significant improvement in scores on item #6, t(39) = 3.91, p = .000</td>
<td>The most notable deficiency in students’ scores was on item #1 which asks students about proper paraphrasing. The scores were low both before and after instruction. The instruction on citing sources will be modified to include proper paraphrasing. Also, the research paper writing process has been modified to include a peer-review. The most improvement was in item #6 which asks students to identify examples of plagiarism. The results show that library instruction and using SafeAssign to assess their own papers was effective in teaching students about plagiarism.</td>
</tr>
</tbody>
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**Table 1: Number of correct responses**

<table>
<thead>
<tr>
<th>Item #</th>
<th>Pre-test Correct</th>
<th>Post-test Correct</th>
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<tr>
<td>1</td>
<td>5</td>
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<tr>
<td>2</td>
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<tr>
<td>6</td>
<td>19</td>
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</table>

Results Category: Course revisions

2) **Please complete an additional Annual Assessment Results Report to report the results of any other program or discipline level outcomes (e.g. program competencies) assessed during 2012-2013.**

The Bioscience Department faculty assess student learning in several areas including: critical thinking, writing, oral presentation, numeracy and information literacy. The chart indicates the breakdown of possible reportable assessments that could be done in each class for record and analysis. The Bioscience Department used this information to determine which of the general education outcomes to focus on for the Fall 2013 semester.

**Potential assessments for Biosciences Department courses**
<table>
<thead>
<tr>
<th>Course</th>
<th>Course Title</th>
<th>Critical Thinking</th>
<th>Writing</th>
<th>Oral Presentation</th>
<th>Numeracy</th>
<th>Information Literacy</th>
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<td>BIO100</td>
<td>Biology Concepts</td>
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<td>Biology Concepts Online</td>
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<td>BIO108</td>
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<td>BIO145</td>
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<td>BIO182</td>
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<td>BIO298</td>
<td>Special Projects</td>
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</tr>
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</table>

**Department Assessment Plan 2013 - 2018**
3) **In a narrative form, discuss faculty “best practices” (e.g. accelerated learning, simulation, learning communities) in your department in the use of innovative technology and alternative teaching practices.**

iPads were used to provide an interactive medium by which students could more fully engage in both lectures and activities. These interactive activities allowed for formative assessment of student progress that was accessible by both teacher and learner. Additionally the iPads were used for testing allowing quiz and exam results to be instantaneously accessed by the students and the teacher. This provides significant learning advantages in that traditionally summative assessment can be used in a formative fashion, further engaging students in the learning process, and preparing them for future assessment. A professional learning community focused on the use of iPads in the classroom met periodically over the course of the year. This PLC, led by Juliane Roybal, and attended by several biosciences faculty members, discussed appropriate and effective use of the newly acquired technology. Additionally faculty and staff shared application and lesson ideas furthering the effectiveness of the teaching and learning process.

The Bioscience department was able to incorporate multiple innovative technologies and alternative teaching practices. iPads and the Nearpod App were used to deliver interactive floral anatomy lectures. With this App, students can label diagrams and answer questions using an anonymous text response, which the instructor can then project to discuss student responses. Second Life was used for microscope simulation. This allowed the students to not only learn how to use the microscope but actually use it to...
view slides from off campus. Case study based learning has been incorporated into several classes to increase student interest by increasing the relevance of the material being taught and student interaction. Interactive white boards have also been used to increase student engagement as well as the use of turningPoint.

Dr. Jon Hayashi, a full time temporary contract faculty, and created new lab exercises and student projects designed to develop student competencies. For example in Bio 156, critical thinking and writing skills were fostered using assignments in which students read a research article and wrote, with the assistance in grammatical construction from the Writing Center, and assistance in structuring a logical argument from a lecture from the Damaris Lycos-Salas of the English department, a series of formal reports. In subsequent assignments, mathematical competency was developed through a series of computational exercises that taught students how to use a spreadsheet program to rapidly compute and graph data in various formats.

Dr. Hayashi co-chaired the Interdisciplinary PLC and helped develop screencasts made in the method that were successfully implemented in BIO 156 and 202 as a flipped classroom approach. Assessment showed a high volume of screencast viewings and test scores showed improvement. An Information literacy activity for BIO 156 that he developed gave students the ability to use the internet as a legitimate research tool and allowed students to exhibit critical thinking in oral presentations and arguments with other class members. In 201, Dr. Hayashi implemented a series of supplementary bones labs in which students, using their knowledge of anatomical landmarks, to make measurements and to then calculate, using standard forensic equations, the height, gender, and race of the subject from a small subset of bones. Assessment showed that this kind of involvement was successful in improving retention of the material.

Organizational Integrity

1. Discuss how during 2012-2013 your department maximized its use of existing resources and pursued new funding opportunities.

All students enrolled in biosciences classes at PC have the use of computers for classwork, online and printed class materials and assignments, course-specific tutors, and clean and fully functional lab equipment and supplies. We carefully structure our course revenues to meet classroom needs and equipment and supply maintenance and replacement.

The PC Biosciences Department mission and goals specify that we will deliver a high quality classroom experience, with up-to-date equipment and supplies that reflect the workplace or are used to develop student skills for success and career choices. Our mission states that the "Phoenix College Biosciences Department faculty and staff are committed to providing relevant and current biology instruction in an accessible and respectful atmosphere." Our goals include: "1. To facilitate an accessible, safe, and respectful learning environment for students, faculty, and staff. 2. To encourage and broaden the student learning experience by employing a variety of instructional delivery methods and current technologies. 3. To ensure relevancy in bioscience
education by reflecting current practices and technology used by industry and research in health care, biotechnology and environmental areas."

Because the PC Biosciences Department does not receive college operational funds for student printing and binding, supplies and equipment, student course fees must cover all aspects of the science lecture and lab classroom materials, equipment, supplies and expendables for the Biosciences Department's instructional activities. Our department classroom and laboratory operations and student support programs serve over 3,200 students per year. To maintain adequate instructional facilities and equipment, we carefully follow a strategic plan for the maintenance and replacement of equipment from semester to semester and year to year. Many of the large pieces of equipment require an annual service contract to save costs on emergency breakdown that interrupt service to the students.

In addition to these equipment needs, we employ two hourly staff to provide lab technical support during hours of student class utilization and preparation. Our technical staff support and maintain living and preserved animal, bacterial, and plant cultures. We also use our student course fees to support our students with 6 part-time tutors that tutor during student convenient hours in the Bioscience Department classrooms.

2. If programs within your department undergo approval or accreditation, please discuss any recommendations made by approval/accrediting organizations and the steps taken during 2012-2013 to address these. N/A

Pathways to Success

1. Identify and describe the partnerships and/or community relationships your department has with educational institutions, including community organizations, public agencies, business/industry, high schools, and/or other organizations. Include in your description information concerning the benefits of the partnership/relationship.

The Biosciences Department led S-STEM program partnered with the tiered STEM Mentoring Project at Rio Salado Community College (Maricopa Community College District) and Metro Tech High School (Phoenix Union High School District) to organize a presentation of research performed by Phoenix College students. Together we recruited community partners: Jessica Hauer (Envision Energy Coach for TUHSD) Rob Knapp (Web Strategist, Multimedia Producer, owner of Iron Post Media), Dan Musgrove (Development Manager for Chevron Energy Solutions), Jeremy Babendure (Arizona SciTech Festival Director), Ruth Vogley (Neonatal RN at Banner Estrella Hospital), Nicole Harris (Phoenix Police Forensic Scientist IV), to attend and serve as judges at the final S-STEM Research/Tiered STEM Mentoring Project Presentation on May 10, 2013 at Metro Tech High School. Metro Tech High School provided facilities, a faculty liaison, Andrew Chapman (Physics, Biology, and Biosciences faculty), and high school students to attend and serve as judges at the final S-STEM Research/Tiered STEM Mentoring Project Presentation on May 10, 2013 at Metro Tech High School.
Dr. Hayashi led a Veritas High School tours of the Department’s cadaver and bones labs. This tour generated interest in the students and the assessment showed that this was an effective method generating in them a positive view of the intellectual opportunities available at PC. He also developed and taught custom A&P course for the Arizona Heart Foundation. This course is for professional cardiovascular technicians that are working to improve their skills and thereby advance in their careers. In addition, the Heart Foundation now knows that, should they have overflow students, that quality course are available at PC.

Several Biosciences faculty continue to serve as student athlete mentors.

If there are advisory committees for programs within your department, please highlight two or three recommendations made by each committee during 2012-2013. Discuss progress on implementing these recommendations. Include current advisory committee membership list(s) with this report. N/A