



Annual Program Review 2010-2011 Instructional Programs

Division:

Biology

Authorization

After the document is complete, it must be signed by the Division Chair and Dean before being submitted to the Program Review Committee.

Signature of Division Chair

Signature of Dean

Date Submitted to Program Review Committee

Describe the relationship of your program to the college's [Mission Statement](#):

The Biology Division has three main areas of instruction: classes for students who wish to transfer to four year institutions and major in the Biological Sciences, classes for students who wish to apply to a Health Science program and require Biology prerequisite courses, and classes for students who take a Biology class to satisfy a general education requirement. The Biology Program provides the students with the knowledge and skills necessary to meet their educational and career goals.

The Biology Division serves the mission of the College by providing a rigorous curriculum in which the students develop important skills in critical thinking and scientific investigation. The laboratory classes help the students to develop observational and technological skills used in the examination of scientific principles and provide an opportunity for the students to work cooperatively with their peers.

1.0. Trend Analysis

For each program within the division, use the data provided to indicate trends (e.g., steady, increasing, decreasing, etc.) for each of the following measures.

Program	FTES Trend	FTEF Trend	WSCH / FTEF Trend	Full-Time % Trend	Fill Rate Trend	Success Rate Trend	Awards Trend
Biology	Increased by 13.2%	ecreased by 1.3%	Increased by 14.7%	Increased by 13.1%	Increased by 17.1%	Increased by .7%	Increased by 50.0%

1.1. Describe how these trends affect student achievement and student learning:

The number of students taking Biology classes (FTES) has steadily increased every year from 2006 to 2009 with a net increase of 13.2%. There has been an increase in the demand for all three areas of Biology instruction but particularly in the Health Science prerequisite classes. The Health Science Biology prerequisite classes have seen the greatest increase in student demand, reflecting the fact that the number one major declared by incoming credit students in Fall 2009 is Registered Nursing (Campus Profile, 2010).

The FTEF reflects the number of courses offered. The 1.3% decrease in the FTEF from 2006 to 2009 is a reflection of the budgetary constraints placed upon the division by the college. All Divisions were asked to reduce the FTEF in 2009 to the number of classes that were offered in the 2006-2007 school year and to reduce the number of classes offered in Winter 2010 by 30%.

The 14.7% increase in the WSCH/FTEF (faculty workload) indicates that although the number of courses offered (FTEF) declined, more students are being served per class. The Biology faculty in all of the classes are serving more students than the assigned seat load. The census enrollment in the Biology classes has risen from 2,117 in 2006 to 2,448 students in 2009, an increase of 15.6%. In addition from 2006 to 2009, the fill rate of the Biology classes consistently has been above 100% from 101.6% in 2006 to 118.7% in 2009. This increase of 17.1% in the fill rate of the Biology classes further indicates that there is an increasing demand for these Biology classes and that the Biology faculty are working harder to meet that demand.

The 13.1% increase in the Full-time Faculty Percent is due to the addition of one new full-time instructor to the Biology Division in 2007. The full-time faculty percent in 2009 was 72.9%, reflecting the fact that most of the full-time faculty are teaching rather than being on release time.

The nonsignificant increase in the success rate in the Biology classes reflects the academic rigor of the courses in our discipline.

Although there was a 50% increase in the total Biological Science AA degrees awarded from 2006 to 2009, the total number of degrees awarded was very low, two in 2006 and three in 2009. Most of the students who are Biology majors do not seek the AA degree but instead take only the courses they need to transfer to the four year institutions.

There was a 3% increase in the total number of Health Science AA degrees awarded from 2007 (33) to 2010 (34) (Campus Profile, 2010). Most of the students who take Biology classes that would qualify for the Health Science degree do not seek the AA degree but instead take these Biology courses as prerequisites for the nursing, pharmacy and physician assistant programs.

1.2. Is there any other relevant quantitative/qualitative information that affects the evaluation of your program?

The Biology Division, under the leadership of Dr. Ron Harlan, has taken the initiative to maintain articulation agreements with the University of California, Los Angeles. Under the current agreement, students who take Biology 101, 102, and 103 are granted credit for the Life Sciences courses LS1, LS2, LS3, and LS4 when they transfer to UCLA. Biology has also maintained a database on student transfer success to UCLA. From 1998-2008 all students who had completed the 8 required core courses for the biology major (Biology 101,102,Chemistry 101,102,105,106, and Math 103, 104), had reasonable involvement in college and community activities, and who maintained a GPA of 3.2 or higher were accepted to UCLA, as biology majors. Data from Kevin Meza and the transfer center indicate that, beginning in 2009, the threshold grade point has risen to 3.4.

In the assessment of the Biology Program SLOs, students in the Biology 101, 102 and 103 classes were surveyed to determine the transfer and acceptance rate to four year institutions by the students completing these classes. Of those students completing Biology 101 in Spring 2010, 19% were planning on transferring before completing the majors General Biology series of classes (101,102,103).

Of those students completing Biology 102 in the Spring 2010, 24% were transferring to UCLA, 24% to UCI, 19% to other UC campuses, 3% to USC, and 8% to CSU campuses.

Of those students completing the Biology 103 in Spring 2010, and thus completing the entire Biology series, 79% were transferring to UCLA, 14% to UCSD, and 7% to UCB. Over 70% were accepted everywhere they applied.

The acceptance rate (especially for the most selective schools) was substantially higher for the students who completed the entire Biology series at GCC, 86% for UCLA and UCB after Biology 103, compared to 41-50% after Biology 101 and 102 only.

2.0. Student Learning and Curriculum

For each program within the division, provide the following information.

Program	% of Courses with Identified SLOs	% of Courses with Ongoing SLO Assessment	% of Courses Reviewed for Outline Changes	% of Courses Whose Prerequisites Were Validated in 2009-2010	% of Courses Whose Textbooks Were Reviewed in 2009-2010	Degree/Certificate SLO* If your division has defined other program SLOs, please indicate below
Biological Science	100%	100%	100%	100%	100%	
Health Science	100%	100%	100%	100%	100%	
Non-major courses	100%	84.6%	100%	No prerequisites	100%	

* A program (for purposes of Degree/Certificate SLOs) is a cohesive set of courses that lead to degrees and certificates. Divisions may further delineate and define programs based on their assessment needs.

2.1. Would you like to comment on your percentages outlined above?

All of the courses in the Biological Science Degree Program have identified SLOs and have ongoing SLO assessments.

All of the courses in the Health Science Degree Program have identified SLOs and have ongoing SLO assessments.

All of the non-major Biology courses have identified SLOs and 84.6% of the courses have ongoing SLO assessments.

Instructors are currently reviewing the course outlines for all of the Biology courses and major revisions will be presented to the Curriculum and Instruction Committee in February, 2011.

The prerequisites for those Biology courses requiring a prerequisite were validated in 2009-2010.

The textbooks for all of the Biology courses were reviewed in 2009-2010 and updates were made to the course outlines

2.2. How has assessment of course-level student learning outcomes led to improvement in student learning?

In the Health Science area of the Biology division, the Biology 115 course SLO was assessed. 85.5% of the students who passed Biology 115, also passed the Biology 120 course. However, only 58.1% of those students who did not pass or did not take the Biology 115 course passed the Biology 120 course. Since this was the first time this assessment was performed, we cannot comment on improvements. However, these data indicate that students who take Biology 115 prior to Biology 120 will significantly increase their chances of success in the Biology 120 course. In the majors Biology courses, the Biology 103 course SLO was assessed with the following results.

In the Bio 103 course the pre- vs. post-exam assessment method has confirmed that the learning is indeed taking place *in this class* (as opposed to in a prerequisite or other previous class). The class improvement on post- vs. pre-test is 75%, and 85% of the students who pass the course perform at the A or B level on the post-test. There is no indication that assessing this course has led to an improvement in student learning over pre-assessment levels, or over the first semester it was assessed.

In the non-majors Biology courses, the Biology 122 course SLO was assessed with the following results. The results were highly variable by section/instructor/question. For the first SLO, the percentage of students who “mastered” the topic (defined as passing performance, or 4-5 points on a 5 point post-test question) ranged from 22% to 77%. However, the high value of 77% was accompanied by a very high level of “mastery” evidenced on the pre-test (16%); more typically pre-test scores (and percent mastery) are very close to zero. This was an evening section, which may tend to attract more serious (and experienced?) students. This idea is also supported by results from the other 2 evening sections, both of which assessed the second SLO above. In these 2 sections, percent mastery ranged from 0-5% on the pre-test, and showed gratifying improvement to 70-84% mastery on the post-test. However, this SLO was assessed using multiple choice test questions, which students are very unlikely to leave blank and are thus more likely to perform well.

2.3. How has assessment of program-level student learning outcomes led to certificate/degree program improvements?

In the assessment of the Biology Program SLO, students in the Biology 101, 102 and 103 classes were surveyed to determine the transfer and acceptance rate to the four year institutions of the students completing these classes.

1. Of those students completing Biology 101 in Spring 2010, 19% were planning on transferring before completing the Majors Biology series of classes (Biology 101, 102, 103).
2. Of those students completing Biology 102 in the Spring 2010, 24% were transferring to UCLA, 24% to UCI, 19% to other UC campuses, 3% to USC, and 8% to CSU campuses.
3. Of those students completing the Biology 103 in Spring 2010, and thus completing the entire Biology series, 79% were transferring to UCLA, 14% to UCSD, and 7% to UCB. Over 70% were

accepted everywhere they applied.

4. Since the acceptance rate (especially for the most selective schools) was substantially higher for the students who completed the entire Biology series at GCC, 86% for UCLA and UCB after Biology 103, compared to 41-50% after Biology 101 and 102 only, the professors who teach Biology 101, 102, and 103 plan on scheduling a mandatory meeting for prospective biology students in the Spring 2011. This meeting will include an explanation of what is expected of the students in the Biology courses, the strategies needed to be successful in the courses, and will inform students that the best chance for acceptance to UCLA and UCB is to complete the entire Biology series at GCC.

To assess the AA Health Science Degree Program, topics in the capstone course, Biology 120 were evaluated for all 5 Spring 2010 Anatomy classes. The unit with the highest average percentage, 78.5%, was the skeletal system. The unit with the lowest average percentage, 64.3%, included the digestive, reproductive, urinary, and endocrine systems. Since this is the first time this assessment has been analyzed, no comment can be made how the assessment of this SLO has led to improvements in the program.

2.4. Does the student assessment data indicate overall program needs that may require support from the institution? Define these observed needs and support your answer using your assessment data.

To arrange the meeting for the prospective Biology students, support from the Student Services Division and the Chemistry Department will be needed. In addition the institution will need to provide funding for printed informational material that will be distributed to the prospective Biology students. Also, website support will be required to place this information online.

The data from the assessment of the AA Health Science Degree Program indicate that more study resources are needed by the Biology 120 students. To learn the anatomy of the body in the laboratory, students use anatomy models of the various organs and structures of the different systems. In the laboratory there are 12 boxes of bones available for the students to learn the material and two dedicated bone boxes available in the Tom Rike Biology study room that students can use to study outside of the lab. The highest average percentage (78.5%) achieved by the students in this unit may be a reflection of the many bone boxes available for study both in and out of class. The unit with the lowest average percentage of achievement (64.3%), included the reproductive, digestive, urinary, and endocrine systems. To study the reproductive systems, the laboratory only has 4 models, 2 models of the female reproductive organs and 2 models of the male reproductive organs. To study the digestive system, the laboratory only has 3 models. These models must be shared with 40 students in the class and this lack of study material may be one of the reasons that the student learning outcome for this unit has the lowest average percentage.

To enhance the learning process, the Biology Division has the Tom Rike Study Room where students may check out materials, such as microscope slides and models to help them study for lab exams. In the student evaluation of instructors, in the section that asks "What else do you think we should do to serve you better?", the evening students always comment that the study room should be open more hours in the evening and on Saturdays. Many of the evening students work during the day and they only have evening hours or Saturdays to review the laboratory material. An additional 15 hours per week for the evening lab technician would allow the Tom Rike Biology Study Room to remain open until 10:30pm on Mondays to Thursdays, Fridays from 3 to 7pm, and Saturdays from 9am-12pm. These additional hours to study will not only increase student learning outcomes but will increase student success and completion in the Biology 115,

120, and 102 courses.

3.0. Evaluation of Previous Goals

This section is an evaluation of program goals and activities from previous years.

3.1. List actions identified in your last program review or any other related plan(s).

The following actions were identified in the Biology Division Instructional Program Review Document 2006-2007.

1. There is need to update the laboratory component of the Biology courses by incorporating new technologies.
2. With the completion of the new Baja Field Station, a plan should be developed to offer Biology courses that recently have not been taught at the station as well as courses from other disciplines.
3. A need was identified to offer more general education Biology courses, such as the Biology 123, the Evolution course.
4. A need was identified to increase the number of full-time faculty members who teach a class in the evening to provide a seamless transition between the day and evening programs.
5. The Biology Division planned to write and assess Student Learning Outcomes in all of the Biology courses.
6. The Biology Division planned to write and assess the Biological Science AA degree Program Student Learning Outcomes to determine if students are able to successfully transfer to the universities and to track student success after leaving GCC.
7. A goal was set to continue outreach to the K-12 in order to inform the high school students of Biology courses available at GCC and of the successful transfer rate of our students to the four year universities.
8. The Biology Division requested the addition of a full-time faculty member to meet the large demand in the Health Science Biology Prerequisite courses.

3.2. What measurable outcomes were achieved due to the actions completed?

1. A proposal was submitted to the Associated Students Campus Project Support and a grant of \$2500 was awarded to the Biology Division for the purchase of the Biopac Student Lab System, that is a computer based program which measures various physiological functions such as electrocardiograms (ECG's) and lung volumes. A second unit was acquired by pooling funds from various sources. This is a major update to the laboratory equipment needed in our Physiology labs.
2. In 2007, Dr. Maria Kretzmann revised the Biology 146, Marine Mammals curriculum, and she taught this class in Winter, 2008 and at the new Baja Field Station in Winter, 2009. The Biology 146 course was a new addition to the classes taught at the Baja Field Station. In Winter 2011, Astronomy 102, another new addition, will be taught in combination with the Biology 146 class.
3. In 2008, the Biology 123, Evolution course outline was revised by Dr. Maria Kretzmann. The revised outline was submitted to and approved by the Curriculum and Instruction Committee. In Spring 2009, the Biology Division was prepared to schedule this additional non-major course but due to the reduction in the FTEF allocation mandated by the college, the course could not be offered.

4. To address the need to increase the number of full-time faculty members who teach a class in the evening, Dr. Keith Conover has been teaching a Biology 122, non-majors Biology class and Dr. Javier Gago has been teaching a Biology 125, Marine Biology class and a Biology 132, PACE Marine Science class in the evenings for several years.

5. The student learning outcomes have been written for all of the courses in the Biology Division and 84.6% of the Biology courses have ongoing SLO assessments.

6. The Biological Science AA degree Program Student Learning Outcomes have been written and ongoing SLO assessments are being conducted. The Health Science AA degree Program SLOs have been written and ongoing SLO assessments are being conducted.

7. Every year the Biology Division has participated in the GUSD College Fair as part of the Division's continued commitment to perform outreach to the local high schools. Recently Dr. Javier Gago and Dr. Maria Kretzmann presented a program in the planetarium about Sharks and Whales and the Baja Biology program. Dr. Maria Kretzmann, with some of her former Baja students made an informational video clip about their experiences in the Baja classes. This video clip is shown during the GUSD show and on Youtube.

8. In 2008, the IHAC committee granted the Biology Division's request for a new full-time faculty position. The Biology Division hired a new faculty member to teach the Anatomy and Microbiology courses which are prerequisites for Health Science programs.

3.3. Evaluate the success of the completed actions. Did the completed actions lead to improved student learning or improved program/division processes?

1. The Biopac Student Lab System was used for the first time in the Physiology classes, Fall 2010, with some success. Students were able to print out their ECG's, calculate their heart rate, and measure the various segments and intervals between waves using the printed graph. Although we did not directly assess student learning in the cardiovascular unit, using this new system allowed the students to have access to clearer graphs from which they could analyze the data. However, we had to borrow a printer from the IT department to accomplish this goal.

2. The Biology 146, Marine Mammals class at the Baja Field Station attracts participation by GCC students, classified staff, and people from the community. While we have insufficient data to compare (not having multiple years, or the equivalent course offered on campus vs. at the field station), the initial results from the SLO assessment for the Biology 146 course (offered as part of the Baja California Field Studies Program) are encouraging. The program attracts a very diverse group of students of different ages, with different backgrounds, very few of whom have significant preparation in Biology. The fact that the majority of these students mastered some fairly sophisticated concepts in Biology suggests that the immersion in the subject provided by the field class allows most students to succeed in learning this material.

3. The Biology 123 class could not be offered as planned because of budgetary constraints placed upon the Biology Division.

4. Dr. Conover and Dr. Gago provide an important resource for the evening faculty and the Biology Division remains committed to continue the presence of full-time faculty in the evening curriculum.

5. The SLOs for all of the Biology courses have been written and 84.6% of the courses are assessing the SLOs. More time is needed to determine if changes made as a result of the

assessment will lead to improved student learning.

6. The assessment of the Biological Science AA degree Program SLO demonstrated that the acceptance rate (especially for the most selective schools) was substantially higher for the students who completed the entire Biology series at GCC, 86% for UCLA and UCB after Biology 103, compared to 41-50% after Biology 101 and 102 only.

7. The Biology Division's participation in the GUSD's College Fair has been very productive in informing the students from the local high schools of our successful transfer program and our unique Biology Program in Baja. The planetarium show and the video clip about the classes offered in Baja succeeded in recruiting students for the Winter 2011 Biology 146 class.

8. Although hiring a new faculty member to teach the Anatomy and Microbiology courses has alleviated some of the demand for these classes, there remains a huge demand for the Human Biology, Anatomy and Microbiology courses.

3.4. What modifications do you plan to make to your program/division in the future to improve student learning and/or program/division processes?

This semester only one unit of the Biopac Student Lab System was used in the Physiology classes. A printer was borrowed from the IT department for use during the Physiology labs. Having only one unit for a class of 38 students was a limiting factor in completing the ECG's for each student in a timely manner. The Biology Division is planning to seek other sources of funding to purchase 2 laser printers that will be dedicated to the Biopac Lab System. This will allow the students to complete the lab in a more efficient manner.

The Biology Division plans to continue to assess the AA Biological Science Degree Program SLOs by following the success of the Biology major students who have transferred to four year universities with a questionnaire using SurveyMonkey.

The Biology Division plans to continue the assessment of the AA Health Science Degree Program SLOs by collaborating with GCC's nursing program to determine if the students who took their prerequisite courses in our Biology Division are adequately prepared for and are able to pass the nursing courses.

4.0. Action Plans

Based on trends and student learning outcomes, describe your program plan for the next academic year. Include necessary resources.

Action	Related EMP Goals and SLOs	How action will improve student learning	Resource Needs
The professors who teach Biology 101,102, and 103 plan on scheduling a mandatory meeting for prospective biology students in the Spring 2011. This meeting will include an explanation of what	This action will address the AA Biological Science Program Student Learning Outcomes, EMP strategic goal 1.3, to increase student success in completion of their	Students will be more successful in the Biology 101,102,and 103 courses. Students will be able to successfully transfer to the university of their choice.	To arrange the meeting for the prospective Biology students, support from the Student Services Division and the Chemistry Department will be needed. In addition the institution will need to provide funding for printed

<p>is expected of the students in the Biology courses, the strategies needed to be successful in the courses, and will inform the students that the best chance for acceptance to UCLA and UCB is to complete the entire Majors Biology series at GCC.</p>	<p>educational goals, and EMP strategic goal 3.4. to streamline the movement through curriculum,</p>		<p>informational material that will be distributed to the prospective Biology students. Also website support will be required to place this information online.</p>
<p>The Biology Division plans to implement the assessment of the AA Health Science Degree Program Student Learning Outcomes by collaborating with GCC's nursing program to determine if the students who took their prerequisite courses in our Biology Division are adequately prepared for and are able to pass the nursing courses.</p>	<p>This action will address the AA Health Science Program Student Learning Outcomes and EMP strategic goal 1.3, to increase student success in completion of their educational goals</p>	<p>Information learned from this assessment and coordination with the nursing faculty will ensure that the nursing students who have taken their Biology prerequisite courses in our Biology Division are adequately prepared for the nursing curriculum</p>	<p>Resources that will be needed to accomplish this goal are data from Ed Karp and coordination with the nursing faculty.</p>
<p>The Biology division will try to obtain more study models for the Biology 120 Anatomy students.</p>	<p>This action will address the AA Health Science Program Student Learning Outcomes.</p>	<p>Having access to more study models will enable the students to learn the laboratory material and achieve better scores on their exams.</p>	<p>Since there is no equipment money available to purchase more models, the Biology Division will submit a proposal to the Associated Students Campus Project Support and a grant proposal to the GCC foundation.</p>
<p>This semester only one unit of the Biopac Student Lab System was used in the Physiology classes. A printer was borrowed from the IT department for use during the Physiology labs. Having only one unit for a class of 38 students was a limiting factor in completing the ECG's for each student. The Biology Division is planning to seek sources of funding in</p>	<p>This action is related to the Student learning outcomes of the Biology 121 class.</p>	<p>This will allow the students to complete the Cardiovascular lab in a more efficient manner and will enhance the student learning outcome of the cardiovascular system.</p>	<p>Since there is no equipment money available to purchase these printers, the Biology Division will submit a proposal to the Associated Students Campus Project Support and a grant proposal to the GCC foundation.</p>

<p>order to purchase 2 printers that will be dedicated to the Biopac Lab System</p>			
<p>The Biology Division will request an increase in the hours for the evening laboratory technician, from 25 hours per week to 40 hours per week. The Biology Division has a study room where students may check out materials, such as microscope slides and models to help them study for lab exams. In the student evaluation of instructors, in the section that asks "What else do you think we should do to serve you better?", the evening students always comment that the study room should be open more hours and on Saturdays.</p>	<p>This action is related to increasing Student Learning Outcomes and EMP strategic goal 1.3, to increase student success in completion of their educational goals.</p>	<p>Having more time to study the laboratory material outside of class in the Biology Study room will allow the students to be more successful and will increase student learning. Having the evening laboratory technician available more hours will especially be beneficial to the evening students, who work during the day and can only review the lab materials during the evening or on Saturdays. More hours for the evening laboratory technician will also be beneficial to the evening Microbiology instructors who have their labs until 10:25 pm.</p>	<p>The college must provide funding for the additional hours for this technician. This request was made in 2006.</p>

2010 PROGRAM REVIEW

Division:

Biology I: BIO-1

Section 5.0. Resource Request

Description: ANATOMY MODELS

All resource requests should be tied to at least one of the following:

- The [Educational Master Plan](#) or other related plan goal.
- The [Core Competencies](#) (Institutional SLOs)
- A program SLO or course SLO

5.1. What planning goal (EMP or other plan), core competency, or course/program SLO does this resource request address?

This resource request addresses the Course SLO for Biology 120 and the AA Health Science Program Student Learning Outcome.

5.2. What measurable outcome will result from filling this resource request? (This could be an improvement in the SLO or another measurable outcome.)

The data from the assessment of the AA Health Science Degree Program indicates that more study resources are needed by the Biology 120 students. To learn the anatomy of the body in the laboratory, students use models of the various organs and structures of the different systems. In the laboratory there are 12 boxes of bones available for the students to learn the material and two dedicated bone boxes available in the Tom Rike Biology study room that students can use to study outside of the lab. The highest average percentage (78.5%) achieved by the students in this unit may be a reflection of the many bone boxes available for study both in and out of class. The unit with the lowest average percentage of achievement (64.3%), included the reproductive, digestive, urinary, and endocrine systems. To study the reproductive systems, the laboratory only has 4 models, 2 models of the female reproductive organs and 2 models of the male reproductive organs. To study the digestive system, the laboratory only has 3 models. These models must be shared with 40 students in the class and this lack of study material may be the reason that the student learning outcome for this unit has the lowest average percentage.

5.3. Describe the resource request in detail.

The Biology Division is requesting money to purchase the following models of the Reproductive and Digestive systems: 1 male half pelvis model for \$595, 1 female half pelvis model for \$435, and 2 Human digestive track models, each \$795. The subtotal cost will be \$2620 + Taxes = \$256 + Shipping = \$393, total will be \$3269

5.4. What resources are needed to fill this request? Potential funding sources might include Senate PFE funding, categorical funding sources, Perkins funding, basic skills funding, etc.

Type of Resource	Amount Requested	Description	Justification	Potential Funding Sources
Personnel				
Facilities				
Equipment	\$3269	Anatomy Models		ASCPS and Foundation grants
Supplies				
Software				
Training				
Total	\$3269			

2010 PROGRAM REVIEW**Division:****Biology I: BIO-2****5.0. Resource Requests****Description: Two Printers**

Complete one copy of this entire section (Sect. 5.0 - 5.4) on a separate page for EACH resource request. *The following page can be copied for this purpose.*

All resource requests should be tied to at least one of the following:

- The [Educational Master Plan](#) or other related plan goal.
- The [Core Competencies](#) (Institutional SLOs)
- A program SLO or course SLO

5.1. What planning goal (EMP or other plan), core competency, or course/program SLO does this resource request address?

The Biology Division is requesting funding to purchase 2 printers that will be dedicated to the Biopac Lab System. This resource request will address the Student Learning Outcome of the Biology 121 class.

5.2. What measurable outcome will result from filling this resource request? (This could be an improvement in the SLO or another measurable outcome.)

This resource request will address the Biology 121 SLO for the Cardiovascular system.

5.3. Describe the resource request (in detail).

The Biopac Student Lab System, which is a computer based program that measures various physiological functions such as electrocardiograms (ECG's) and lung volumes, was purchased with the support of an Associated Students Campus Project Support grant. A second unit was acquired by pooling funds from various sources. One Biopac Student Lab System was used for the first time in the Fall, 2010, Physiology classes with some success. A printer was borrowed from the IT department for use during the Physiology labs. Having only one unit for a class of 38 students was a limiting factor in completing the ECG's for each student in a timely manner. The Biology Division is requesting funding to purchase 2 printers that will be dedicated to the Biopac Lab System. This will allow the students to print out their ECG's, calculate their heart rate, and measure the various segments and intervals between ECG waves using the printed graph. This will improve the understanding of the cardiovascular system.

5.4. What resources are needed to fill this request? Potential funding sources might include Senate PFE funding, categorical funding sources, Perkins funding, basic skills funding, etc.

Type of Resource	Amount Requested	Description	Justification	Potential Funding Sources
Personnel				
Facilities				
Equipment	\$400	2 laser printers	These printers will be used with the Biopac student lab system to print out ECG graphs and Spirometry measurements	ASCPS and Foundation grants
Total	\$400			

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2010 PROGRAM REVIEW**Division: Biology I: BIO-3****5.0. Resource Requests**Description: **Add'l Hours- Lab Tech.**

Complete one copy of this entire section (Sect. 5.0 - 5.4) on a separate page for EACH resource request.
The following page can be copied for this purpose.

All resource requests should be tied to at least one of the following:

- The [Educational Master Plan](#) or other related plan goal.
- The [Core Competencies](#) (Institutional SLOs) OR a program SLO or course SLO

5.1. What planning goal (EMP or other plan), core competency, or course/program SLO does this resource request address?

This resource request addresses increasing student learning outcomes in the Biology 115, 120, and 102 courses and EMP strategic goal 1.3, to increase student success in completion of their educational goals.

5.2. What measurable outcome will result from filling this resource request? (This could be an improvement in the SLO or another measurable outcome.)

Having more time to study the laboratory material outside of class in the Tom Rike Biology Study room will allow the students to be more successful and will increase student learning. Having the evening laboratory technician available for more hours will especially be beneficial to the evening students, who work during the day and can only review the lab materials during the evening or on Saturdays. More hours for the evening laboratory technician will also be beneficial to the evening Microbiology instructors who have their labs until 10:25 pm.

5.3. Describe the resource request (in detail).

The Biology Division is requesting an increase in the hours for the evening laboratory technician, from 25 hours per week to 40 hours per week. The Biology Division has the Tom Rike Study Room where students may check out materials, such as microscope slides and models to help them study for lab exams. In the student evaluation of instructors, in the section that asks, "What else do you think we should do to serve you better?", the evening students always comment that the study room should be open more hours in the evening and on Saturdays. Many of the evening students work during the day and they only have evening hours or Saturdays to review the laboratory material. The additional 15 hours per week for the evening lab technician will allow the Tom Rike Biology Study Room to remain open until 10:30pm on Mondays to Thursdays, Fridays from 3 to 7pm, and Saturdays from 9am-12pm.

5.4. What resources are needed to fill this request? Potential funding sources might include Senate PFE funding, categorical funding sources, Perkins funding, basic skills funding, etc.

Type of Resource	Amount Requested	Description	Justification	Potential Funding Sources
Personnel	15 hours per week	This is not a new position but only the addition of 15 hours per week.	The addition of 15 hours per week for the lab technician will allow the evening students more time to review lab materials in the evening hours and on Saturdays and to provide support to the adjunct evening instructors.	CHAC
Total				