

# Program Review/Follow-up Transmittal

## General Information


The attached report is (check one):  Program Review (published every 4<sup>th</sup> year)  
 Program Review Follow-up (submitted annually)

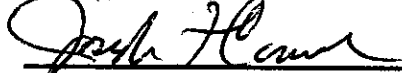
The report is submitted for the Academic Year (select one): 2009-10


The report contains information on the follow unit(s) (enter names of all units/programs):  
Biology

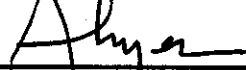
## Report Abstract:

The biology department has experienced significant growth over the last five years while maintaining retention. We continue to serve majors, non-majors and students preparing for nursing and other health related fields. This growth has created or exacerbated existing issues with staffing, space and facilities. Developing the program at Vallejo has allowed growth and more is expected at Vacaville. While new faculty have been hired, a new full-time technician supporting biology and chemistry at the new Vacaville Center will be needed.

Signature:  Date: 6/16/10  
Gene Thomas  
Faculty/Staff Representative

Signature:  Date: 6/16/10  
Joseph Conrad  
Dean/Director

Signature:  Date: 21 Jun 10  
Thomas Watkins  
President Academic Senate

Signature:  Date:  
Robin Steinback Arroyo Reyes  
Vice President

Signature:  Date: 07-13-10  
Jewel Laguerre  
Superintendent/President

## Program Review and Analysis

### Part I Outcomes

1. **What are the Student Learning Outcomes (SLOs) and Institutional-Level Outcomes (“Core Four”) of the program? List each along with descriptions of the appropriate indicators of program success (i.e., measures of outcomes). Include both quantitative and qualitative measures.**

Outcome(s)	Qualitative Measure(s)	Quantitative Measure(s)
Allied Health students will demonstrate knowledge of anatomy, physiology, and microbiology that enables them to successfully graduate from a program in a nursing or other allied health discipline.	Not Applicable	The percentage of nursing students who successfully completed Solano’s RN program is significantly greater for students who took both microbiology and physiology at SCC vs. those who did not (44 vs. 28 percent). Data based on an analysis from 2001 to Spring 2009 with 182 students from Solano and 126 non-Solano students.
Students majoring in biology will demonstrate a knowledge of core biological principles required to successfully complete a biology program at Solano College.	Not applicable.	In 2008-09, seven students earned an Associate’s degree in Biology; in 2007-09, five students received degrees; in 2006-07 there were eight; and 12 students in 2005-06.
Students who take nonmajors courses (Biology 12, 15, 16, 19) will demonstrate a knowledge of biology that enables them to pass their General Education requirements.	Not applicable.	In the Fall of 2009, 286 students succeeded; in the Fall ‘08/Spring ‘09 academic year, 627 students succeeded; in Fall ‘07/Spring ‘08, 1005 students succeeded; and in Fall ‘06/Spring ‘07, 578 students were successful.

2. **The specific SCC Strategic Direction and Goal(s) supported by this program:**

**Goal 1/Obj 1.1:** Enhance attainment of educational goals by students. About half of the Biology courses are being offered in the Vallejo Center, enabling students to travel less distance and better coordinate their work schedules. In 2008-09, 7 students received degrees in biology; in 2007-08, 5 students received biology degrees; in 2006-07 there were 8; in 2005-06 there were 12.

**Goal 1/Obj 1.3:** Develop new and expand existing curricular offerings. Measure G funds provided for a new videomicroscopy station in 305 for Biology 1 and Biology 15 students. This station dramatically improves the learning environment as exceptional specimens can be viewed by the entire class at one time. Also, images of specimens can be captured for future use and living specimens can be filmed.

**Goal 2/Obj 2.1:** The number of students served. We increased enrollment 38 percent from 2448 in 2004-05 to 3386 in 2009-10.

## Part II Analysis

### 1. Identify and explain the trends in:

**Enrollment—** The analysis of student enrollment shows an increase in the number of students between the five academic years analyzed (from 2004-05 to 2008-09). The increase in number of students was greater during the academic years 2005-06 and 2006-07 reaching a 14% increase for both years. During the following academic years the increase in student enrolled into Biology classes increased 2% (2007-08) and 4% (2008-09). In summary, during the academic years between 2004-05 and 2008-09 the number of students enrolled in Biology classes increased by 27%. In 2004 there were 2448 students and in 2008 there were 3386 students enrolled, with a net increase of 938 students.

**Retention—** From 2004-08, the average retention rate for all semesters remained stable at around 75 percent. Retention rates increased significantly from 2008 to 2009 to 81 percent. Whether this trend is real and will continue remains to be seen.

**Fill rate—** Based on the data provided for program review 2008-2009, fill rates for Biology courses have remained fairly steady over the past 4 years, ranging from 97 percent in 2005-06 to a high of 100 percent for 2006-2007. During 2007-08 as well as 2008-09, the fill rate for Biology courses has remained steady at 98%. This high percent fill rate for Biology courses is in part related to the fact that many of our students are pursuing the study of Nursing and other Allied Health fields, which require students to take anatomy, physiology, and microbiology.

These fill rates for Biology courses are comparable (86-88 percent) to all Math and Science courses over the same period of time.

**Other Factors—** FTES generated by Biology increased significantly from 2004-05 to 2008-09. The number of FTES increased 12 percent between 2004-05 and 2005-06. The following academic year there was an increase of 9 percent, followed by a slight decrease (2 percent) in 2007-08. The FTES then increased by 9 percent for 2008-09. Considering the last five academic years, the number of FTES increased by 23% from 539 in 2004-05 to 702 in 2008-09.

During the past two years, individual instructors of Anatomy (BIO 4) have raised concerns over the air quality in laboratory 306, which serves as the only anatomy lab for 9-10 sections of Anatomy each semester. Since formaldehyde and phenol are among the components of the preservative solution of both prosected specimens and embalmed cadavers used in the lab, there is an abundance of these chemicals in the lab environment during the second half of each semester. Although lab 306 was remodeled previously and venting problems were addressed at that time, currently, there are signs that the venting system may not be functioning properly to insure that our faculty, staff, and enrolled students are working in a safe environment. At the present time, only qualitative, anecdotal information is available; but we find significant that four of eight full- and part-time instructors of Anatomy experience migraine headaches during each semester and there is a correlation between frequency of headaches and the exposure to the formaldehyde/phenol. It is possible to obtain quantitative measurements by having instructors wear special collecting/analysis devices during lab periods. We would like to address this matter since there is a concern that the work environment in lab 306 may be less than adequate.

**Outcomes Data—**

**2. How do the above trends relate to the factors and outcomes identified during the last review?**

- a. The quality of the lab experience for all our students was dramatically improved by the addition of 60 microscopes for 305, 306, and 307.
- b. At the Fairfield campus, the Division had hired an additional full-time technician who spent half her time in Biology and half in Chemistry. That position was moved to the Vallejo Center, so the sole Biology technician we have is now extremely overworked. We also have concerns that a technician has not been hired for the soon-to-open Vacaville Center.

**Part III Conclusions and Recommendations**

**1. What are the major accomplishments of the program during the past four years?**

- Three full-time faculty were hired: Patsy Itaya and Margherita Molnar (anatomists) and Phillip Summers (anatomy, physiology, general biology).
- Measure G funds have provided a new videomicroscopy station in 305.
- We are providing about half of our biology courses at the Vallejo Center.
- One biologist was awarded a sabbatical for Spring 2011 to write a manual for Biology 15, which will result in financial savings for both students and the department/division/college.

**2. Based on the analysis above, are there any changes needed in order to meet program goals or to improve program effectiveness? Explain.**

- An additional technician must be hired to meet the increased work load at the Fairfield Campus and a full-time Biology/Chemistry technician must be hired for the Vacaville Center.
- New laboratories must be added: (1) to meet student demand; (2) to provide a more safe environment for students, staff, and faculty; and (3) to upgrade equipment/facilities to meet technological and academic changes occurring in biology in the 21<sup>st</sup> century.
- In order to teach cadaver anatomy to 30 students, we need to fund and install new Audio visual teaching equipment in the anatomy lab.