

Antelope Valley College

Fall 2012 Program Review - Annual Update by Section

As of: 7/14/2013 06:28 PM EST

Discipline/Program/Area Name

Biology Department (PR)

[President's Office, Program Reviews, Academic Affairs (PR), Math, Science & Engineering Division (PR)]

Biology/ Majors Biology/Science Biology covers courses for majors ,non-majors Biology, Microbiology and Anatomy/Physiology (A&P). The only program truly identified here is Majors Biology. The majority of the biology courses are entry level laboratory-accompanied courses to satisfy that graduation requirement, or transfer level courses designed to provide the background scientific information required for entry into health science programs.

Academic Year

Biology Department (PR)

[President's Office, Program Reviews, Academic Affairs (PR), Math, Science & Engineering Division (PR)]

2011-2012 academic year, reviewed for October 2012 annual update deadline.

Name of person leading this review.

Biology Department (PR)

[President's Office, Program Reviews, Academic Affairs (PR), Math, Science & Engineering Division (PR)]

Dr. Anne Hemsley

Names of all participants in this review.

Biology Department (PR)

[President's Office, Program Reviews, Academic Affairs (PR), Math, Science & Engineering Division (PR)]

Dr. Anne Hemsley, Dr. Zia Nisani,

Please review the five year headcount and FTES enrollment data provided on [Program Review website](#). Comment on trends and how they affect your program.

Biology Department (PR)

[President's Office, Program Reviews, Academic Affairs (PR), Math, Science & Engineering Division (PR)]

Within the document repository, please find a Microsoft Excel spreadsheet detailing the statistics for Biology and containing derived data, including 5 year averages and a % of the five year average for the academic year 2011-2012. The sections offered dictated the headcounts and the section count trends in Biology are identical in nature and scope to those seen for headcounts. There appears, however, to be a discrepancy in some parts of the derived headcount data provided by IRS. Upon close examination of the annual figures, the sum of headcounts from all four semesters is significantly higher than the reported annual headcounts (by 300-400 each year). Using the IRS-provided derived data, the 2011-2012 headcount is 92.46% of the five year average. Using corrected headcounts, it is only 89.55% of the five year average. The corrected data has been added into the spreadsheet and shown in red. Very significant reductions in headcount for Summer and Intersession terms have been offset to an extent by enrollments in Fall and Spring semesters but numbers show that over five hundred fewer students had the opportunity in the past academic year to complete degrees or advance in their pre-nursing studies when compared to the 2009-2010 cycle, where growth was in evidence and budgetary cuts were not yet implemented. The number of degrees in Biology was 101% of the five year average but only 80% of the number awarded in 2009-2010. Annual FTES for 2011-2012 were 96.57% of the five year average but only 87.33% of the figure observed during the unimpeded growth trend of the 2009-2010 academic year. The 2011-2012 percentage of full-time students was slightly higher than the 5 year average (102.94%), with the increase being observed in the Fall semester. The significant effect on the program of all these cuts has been a reduction in our effectiveness in educating deserving students. The impact on the program itself in this manner has been clearly outlined. If other impacts need to be discussed, further clarification would be welcomed as to the type of detail desired.

Using the student achievement data provided on the [Program Review website](#), please comment on any similarities or differences in success, retention, and persistence between race, gender, and location/method of delivery groups. Please comment on all three (success, persistence, and retention). Identify which trends and achievement gaps will be addressed in the current academic year.

Biology Department (PR)

[President's Office, Program Reviews, Academic Affairs (PR), Math, Science & Engineering Division (PR)]

Persistence figures for both Fall to Spring and Spring to Fall are increased by 6-7% in the 2011-2012 cycle when compared with the five year average. With respect to individual success and retention trends (ethnicity, race, gender, location method of delivery), the results from the past cycle are very similar to

those of the previous two years in almost every case. Exceptions might be the 6% drop in success of Native American students, and the 12% drop in Pacific Islander retention. Since these tend to be smaller populations of students, and since we were not provided with actual numbers, it is difficult to know whether this is truly a significant change. The data themselves can be viewed by accessing the uploaded Xcel spreadsheet in WEAVE. Since there are no differences in this cycle of update, comments of a detailed type will be reserved for the major review which must be completed next year. Question 6 asks simply for comments on similarities and differences. Data on success and retention on the Palmdale campus are compared over four years only, due to the recent development of this facility . There is a 6% higher success and retention rate at the Palmdale campus. This is likely because Palmdale does not host the more rigorous courses such as majors biology, physiology and microbiology. Only introductory biology courses are taught there. Section count by location data reveals that 10 sections were taught at Palmdale while 167 biology sections were offered at the Lancaster campus. The actual success rates of different ethnic and racial groups do differ significantly, although each rate has remained relatively unchanged over the past five years and the rates are comparable to national statistical data. At the extremes, the Asian success rate is 74%, while the African American success rate is closer to 51%. The data themselves can be viewed by accessing the uploaded Xcel spreadsheet in WEAVE. Since there are no differences in this cycle of update, comments of a detailed type will be reserved for the major review which must be completed next year. Question 6 asks simply for comments on similarities and differences and the context provided indicates a comparison with past years is what should be provided.

Analyze changes in student achievement and achievement gaps over the past five years. Cite examples of using data during that time as the basis for resource allocation (e.g. human, facilities/physical, technology, financial, professional development) or making other changes that resulted in improvements in student achievement.

Biology Department (PR)

[President's Office, Program Reviews, Academic Affairs (PR), Math, Science & Engineering Division (PR)]

The actual success rates of different ethnic and racial groups do differ significantly, although each rate has remained relatively unchanged over the past five years and the rates are comparable to national statistical data. At the extremes, the Asian success rate is 74%, while the African American success rate is closer to 51%. Many factors likely contribute to this difference but the conclusions from national studies strongly suggest that the biggest predictors of success in entry-level undergraduate Biology courses are high school GPA and success in high school chemistry(1). Completion of higher level mathematics at the high school level has also correlated positively with successful transfer to a four year university (2). If we wish to enroll students who have a high chance of completing their courses successfully, attention to high school preparation and encouragement/ selection of students who achieve high high school GPA results will be key factors in the effective utilization of resources. Steps being taken to

close this achievement gap include outreach to Antelope Valley high schools where teachers may be desirous of input for updating both regular curriculum or advanced placement courses so that students will be as prepared as possible upon college entry. In addition, Antelope Valley College will host events which are part of the nationwide Science Olympiad. As summarized in the Science Olympiad home page "Science Olympiad is a national non-profit organization dedicated to improving the quality of K-12 science education, increasing male, female and minority interest in science, creating a technologically-literate workforce and providing recognition for outstanding achievement by both students and teachers. These goals are achieved by participating in Science Olympiad tournaments and non-competitive events, incorporating Science Olympiad into classroom curriculum and attending teacher training institutes." Participation in the Antelope Valley will encourage and foster interest in the sciences and potentially increase networking, communication and collaborations between AVC and regional high schools. Further information is available at <http://www.soinc.org> With respect to facilities and technology, Biology courses taught at the Lancaster campus are now offered within the state-of-the-art HS building. Equipment used in teaching labs has been replenished and the physical environment for teaching is very high quality, both in laboratories and lecture rooms. Computers, CD and DVD players and magnifying devices for allowing full classroom viewing of experimental results or samples are installed in all lecture and laboratory teaching rooms. Student study rooms are provided within the building as well as in the AVC library. There is increased ease of access to instructors during office hours with all faculty being cloistered close to their teaching rooms. 1. M. Singh (2009), "Student Performance and Success in Entry-Level Undergraduate Biology Courses". Texas State University from www.nabt.org/websites/institution/File/.../SINGH_NABT_2009.pdf 2. National Center for Education Statistics (2012) in nces.ed.gov/pubs2012/2012046/chapter4.asp - 28k

Provide examples from your program where assessment findings of Student Learning Outcomes (SLOs), Program Learning Outcomes (PLOs), and/or Operational Outcomes (OOs) were discussed and used to make budget decisions in the past year. This should include brief descriptions of assessment findings, when the discussions occurred, who participated, and what, if any, budget items/resources resulted.

Biology Department (PR)

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Assessment results of SLOs for ten courses in Biology have all been recorded for both Spring and Fall semesters of the 2011-2012 cycle, but this is the first year in which complete data has been gathered. Four courses (BIOL 104, 110, 120 and 201) have some assessment target results that were not met. Three courses (BIOL 100, 102 and 202) have partially met targets. Insufficient data is available at present to use any of the information for budgetary decisions. After several more years of data have been collected and the results could be considered statistically significant, there may be meaningful discussion and use

of the gathered information. PLOs for for Biology majors have been recently completed. Data gathering is in preliminary stages. Meetings at which data was discussed include the Welcome Back Day meeting, which occurs on the Friday before the Fall semester begins. A two hour meeting involving all faculty is held at that time. Records of discussions that contributed in a meaningful manner to the recording of SLO and PLO parameters can be uploaded into the document repository by simply scanning any of these documents and saving .pdf files of their contents. Email communications between faculty discussing SLO data may similarly be uploaded. At the last meeting (August 2012), the SLO facilitator from IR offered to place any relevant documents into the repository. In future, individual SLO facilitators may take over this role if necessary.

Analyze changes in SLO, PLO and/or OO assessment findings over the past five years. Cite examples of using data during that time as the basis for resource allocation (e.g. human, facilities/physical, technology, financial, professional development) or making other changes that resulted in the improvement of SLO, PLO and/or OO findings this past year.

Biology Department (PR)

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The results of the past four years are not usable/comparable at this time. Until last year, some courses assessed only one or two SLO, others with a large number of full-time and part-time instructors chose to assess different SLOs in different course sections. PLOs have only just been formulated for the Biology major. It will require diligent assessment results gathering for several more years to provide a statistically meaningful body of data. The 2011-2012 cycle alone is the beginning of this data gathering revision. From this time onwards, all faculty members are being required to assess all SLOs for their courses both in Spring and Fall semesters. This has been mandated now that faculty have more familiarity with the process. Department chairs have been particularly generous with their time. Thanks must also go to Aaron Voelcker for his helpful training sessions. Creating a Professional Development event at the Welcome Back Day at the beginning of the academic year has ensured that faculty become involved in the process.

Review the program goals and objectives related to improving outcome results and/or student achievement identified in the most recent comprehensive self study and subsequent annual update(s). List program goals and objectives for this academic year, adding new ones if needed.

Biology Department (PR)

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The PLOs established for the Majors Biology program have been uploaded into the document repository. They were established in May 2011. They were not

developed at the time of the last comprehensive self study. Data collection for one year only has occurred so far. Since the majors courses (BIOL 110 and BIOL 120) are only offered once per year, there is insufficient data available at present to identify trends, analyze goal achievements etc. The beginnings of meaningful analysis may be anticipated in next year's comprehensive self study. With the additional laboratory facilities provided in the new Health and Science Building, there is additional opportunity to develop the Majors Biology program. The lack of space that restricted the offerings of BIOL 110 and 120 to a single section offering per year has been remedied with the construction of laboratory space dedicated to the majors courses alone. There is a great need to offer both courses every semester, since students who might need a single course to complete their biology studies may at present have to wait an entire year for a course offering. Majors Biology teaching faculty would like to see both courses offered in both semesters beginning Spring 2013.

List significant new and continuing resource needs in rank order of importance. Identify the document (e.g. Educational Master Plan, action plan, state mandate, accreditation mandate) and/or data which corroborate each need.

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Biology has recently been generously endowed with new facilities and equipment with the completion of the construction and furnishing of the new Health and Sciences Building. The equipment needs outlined in last year's annual update have almost all been met, with the exception of those listed below: Biology 120: (a) purchase of various animal skeletons to represent the diversity found in different niche dwellers (e.g. fossoreal, arboreal, marine) for a more hands-on approach in laboratory exercises exploring functional morphology. (SLOs 2, 3, 5) (b) purchase of taxonomic charts to illustrate the concept of morphologically derived taxonomic levels (SLOs 2, 3, 5) The cost of procuring human cadavers for Biology 201 has steadily increased in recent years, to about \$3400 each at the present time. Although these specimens remain useful for 4-5 years, a male or female replacement is typically required every 2 to 3 years - a cost which severely impacts the limited supply budgets in biology. Our most recent cadaver purchase was made possible by a generous community donation through the AVC Foundation. However, Foundation support cannot be expected on a reoccurring basis and some designated allocation of district funds should be established to enable these essential acquisitions and thus mitigate the significant impact on regular biology supply budgets.