

PROGRAM REVIEW
Western Nevada College
A.S., Biological Sciences

I. Description of Program Reviewed

The Biological Sciences emphasis is designed to equip students with basic and applied knowledge in general biology with an emphasis in critical thinking, bioethical issues, a basic understanding of science and its methods, and laboratory and analytical skills related to the field of biology. Students are prepared to pursue studies in the fields of, but not limited to, biology, environmental studies, pre-health care, biochemistry, biotechnology, or as preparation for a teaching career. The 63-credit program requires 39 credits in the emphasis and 24 general education credits.

II. Review Process and Criteria

The Associate of Science in Biological Sciences program was reviewed 2009-2010 in order to identify program strengths and challenges in terms of student success and satisfaction, recruitment, enrollment, curriculum, and scheduling. Institutional Research staff provided data used as evidence to support findings and recommendations.

The self-study process followed program review guidelines developed by WNC's Program Assessment and Review Committee (PARC). Internal and external reviewers provided feedback on the self-study report as well as findings and recommendations based on review of the self-study report, a tour of the Carson City campus facilities, an exit interview with the President and Vice President of Academic and Student Affairs, and a focus group discussion with students from the program. An English professor from WNC served as the internal reviewer, and the Dean of the School of Science & Mathematics from CSN served as the external reviewer.

III. Major Findings and Conclusions of the Program Review

Commendations

- Program faculty participate in outreach events, such as College Day, Native American Day, and Ninth-Grade Women in Nontraditional Careers Day.
- The cadaveric facilities on the Carson campus are an asset.
- Program faculty and administrators strive to educate and prepare rural students for jobs in the health care field.
- To improve student success rates in pre-nursing biology classes, the minimum grade requirement for prerequisite courses has been raised to a "C," beginning fall 2010.

Findings, Recommendations, and Actions Taken

Recommendations (in italics) are attributed as follows: Program Review Team [P]; Internal Reviewer [I]; External Reviewer [E].

- The number of students with declared majors in Biological Sciences is increasing but few are attaining the degree.

Action taken: The degree was brought into closer alignment with four-year institutions with the following changes to the curriculum, effective fall 2010: BIOL208 (Human

Genetics), 223 and 224 (*Human Anatomy and Physiology I and II*), 251 (*General Microbiology*), and MATH182 (*Calculus II*) were removed as emphasis electives and CHEM220 (*Introductory Organic Chemistry*) was added. [P]

Recommendation: *Enforce all published prerequisites in the emphasis to ensure that students are prepared for the coursework.* [P,I,E]

Recommendation: *Evaluate the need for the A.S. in Biological Sciences at WNC in its current form.* [P]

Recommendation: *Encourage back transfer of classes to increase the graduation rate.* [P,E]

Recommendation: *Develop a new course sequence and reevaluate prerequisites to improve student success rates in CHEM121 (*General Chemistry I*) and BIOL190 (*Introduction to Cell and Molecular Biology*) and to more closely align with programs at other NSHE institutions.* [P]

Recommendation: *Research the possibility of combining Chemistry and Biological Sciences emphases into an A.S. in Natural Sciences.* [P]

Recommendation: *Research the possibility of creating an Integrated Health sub-emphasis for pre-nursing students who do not make it into the nursing program.* [P]

- Not one emphasis course addresses at a significant level the program student learning outcome to “develop an understanding of the history and philosophy of science as well as its relationship to society and the daily lives of students.” All four required biology courses moderately address the outcome, and all but one of the remaining courses in chemistry, math, and physics slightly address it.

Recommendation: *Significantly address this outcome with a specific course that would further develop students’ critical thinking skills and improve student satisfaction.* [I]

- Some students who participated in the focus group discussion felt that while they were sometimes overwhelmed with factual information, there were few opportunities in emphasis courses to respond to material as critical thinkers.

Recommendation: *Provide opportunities for students to respond to material in ways that require critical thinking, including reflecting on bioethical issues, a goal that aligns with the program’s mission.* [I]

- Depending on the general education courses students take, they may not meet three of the 10 general education student learning outcomes: SLO #5 (have appropriate technological skills, including computer skills), SLO #6 (know the basic principles and processes of government at the local, state, national and international levels), and SLO #8 (understand and apply social science principles, including an appreciation of participation in civic affairs).

Recommendation: *Ensure that all 10 general education student learning outcomes are addressed in the program regardless of general education classes selected to fulfill general education requirements.* [P,E]

- Students are not afforded equitable access to pre-nursing biology classes.

Recommendation: *Limit course repetition in BIOL223, 224, and 251 to two times within a five-year period.* [P]

Recommendation: *Set up the new PeopleSoft student information system to delay enrollments into BIOL223, 224, and 251 until final grades in prerequisite courses have been posted for all sections.* [P,E]

- Learning objectives for BIOL190 and 190L are not consistent across all sections.
Recommendation: *Develop and publicize consistent learning objectives for use in all sections. In addition, design and implement common pre- and post-assessments to assess the effectiveness of instruction across sections.* [P]
Recommendation: *Maintain diversity of instruction by resisting over-defining course objectives for all sections.* [E]
- The quality of lab facilities is not consistent at the three campuses.
Recommendation: *Continue upgrades to facilities on all campuses, including media equipment, storage, furnishings, and fixtures.* [P,E]
Recommendation: *Expand cadaveric facilities to all campuses.* [P,E]

IV. Descriptive Statistics

A. Number of students with declared major in the program area:

2009-10 177 (does not include summer 2010)

B. Number of graduates from the program for the following years:

2007-08 0

2008-09 1

2009-10 0 (partial data for spring 2010; no data for summer 2010)

C. Headcount of students enrolled in any course related to the program (duplicated):

Fall 2009 775