INSTRUCTIONAL PROGRAMS AND AREAS
PROGRAM REVIEW / PLANNING AND EVALUATION PROCESS

QUESTIONNAIRE FOR INSTRUCTIONAL PROGRAMS

INSTRUCTIONS:

Complete all sections as instructed. Click the shaded sections to type your answer.
When completed, please save your file and e-mail it as an attachment to tanya_hanton@westvalley.edu.

A. INTRODUCTORY QUESTIONS

1. Program Name: ***BIOLOGY***

2. Person(s) completing the questionnaire: *Nathan Norris*

3. Date of completion: *5 November 2007*

4. What are the primary purposes of the program? Check all that apply.

- ☒ WVC Degrees and Certificates
- ☒ Transfer Courses
- ☒ WVC General Education
- ☒ Lifelong Learning/Life Enrichment
- ☐ Occupational / Vocational Courses
- ☐ Student Support Services
- ☐ Academic Support Services
- ☐ Administrative Functions

5. In one paragraph, how does the program further the College's mission and goals? (only new information need be added)

The biology department / program fulfills several of the missions of West Valley College including:
(1) transfer preparation: essentially all biology courses are fully transferable to UC/CSU and other colleges/universities (100% CSU, 70%+ UC). The biology department / program also prepares students for college level courses in terms of critical thinking, organization and communication;
(2) general education: all of the courses in the biology program can be used to fulfill general education science requirements, while several are specifically geared to fulfill this need (biology 10 and 11 alone fulfill this need for over 1000 students each year).

6. In one paragraph, what significant events have affected or impacted the program since the last program review?

The biology department has experienced an increase in demand, particularly in the health career track courses (i.e. Anatomy). At the same time we have experienced an effective decline in funding for basic instructional supplies as budget increases lag behind increasing costs (including equipment maintenance, replacement and upgrade), increasing conflict over finite classroom facilities, a lack of adequate technological upgrades and an ongoing 15-18 hour teaching load. All of these issues have held back the ability of the biology department to increase its offerings and its WSCH while providing a high quality, safe learning environment. Not only have week-to-week operations of the department been adversely affected by lack of supplies and facilities, we are at the verge of not being able to continue to provide the current level of instruction and resources due to aging equipment (i.e. 30 year old

microscopes, outdated computers…).

Some of these issues have been partially resolved through the addition of a sixth biology lab in the portable "village". This has enabled the biology department to add additional sections of Anatomy (a course currently in high demand). All of the remaining issues mentioned above continue to hold true. It is hoped that many of the remaining issues will be partially alleviated as part of the planned new construction and renovation of the Science and Math facilities.

Faculty teaching loads in Biological Sciences continue to be an issue, which has negatively affected the ability of faculty to most effectively serve students and participate on college committees effectively decreasing our contribution to shared governance. Recently the Association of College Educators (ACE) negotiated a temporary load adjustment for lecture load to base 15 (expires at the end of fall 2008). This served to equalize at least the biology lecture loads to the campus standard. The biology faculty still maintain that the lab loads must also be adjusted to base 15 in order to allocate enough time to provide our students the same quality of education students in other disciplines enjoy (For example: faculty preparation, meeting with students, staying current in the discipline, participation in college committees, grading etc.).

With the retirement of a faculty member (an ecologist) we are dependent on adjunct faculty to teach courses in the environmental area of biology. The biology department is currently petitioning for one full time faculty position to fill the vacated position.

B. DATA ELEMENT ANALYSIS SECTION (ANALYSIS AND RESPONSE)

1. Using the enrollment data from Table 1 from previous program review, add or revise as appropriate.

a) What significant trends are revealed in the data?
b) What factors might contribute to any program differences compared to the College data?
c) What conclusions do you draw from this analysis that could form the basis for an action, objective or request for resources?

NOTE: In the absence of a research analyst, new data are not available to us this year. All data presented are copied from the 2006-2007 program review

The general trend indicates that the biology department continues to perform well above the college as a whole.

a. Headcount: while college headcount has been on the decline the biology department headcount has been steadily increasing. FTEs/FTEf: while the college FTEs/FTEf ratio has been on the decline the biology department's has remained steady. It is significant to note that the biology departments FTEs/FTEf ratio has been at 150% of the college average or better (and growing).

b. The biology department has always strived for efficient and effective modes of serving a large number of students. As enrollment demand has increased we have continued to investigate innovative means of accommodating the demand. The department has consistently filled many of its lecture offerings with 65 or more students (by combining 2 lab sections for each lecture) and enrolls 30% more students per lab section than any of the identified colleges in the bay area. These, and more, have factored in to the biology departments high FTEs/FTEf performance rate.

c. There is a recognized increase in demand for the health careers courses (i.e. Anatomy). Unfortunately, the biology department is reaching its limit in its ability to accommodate this demand. Up until now the department has grown without any significant increase in resource allocation. Impacted lecture and lab space, wear and tear on specimens and equipment and a finite staffing (both faculty and staff) will need to be addressed if the biology department is to continue to increase enrollment to meet the demand as it has in the past.

2. Using the demographic data from Table II from previous program review, add or revise as appropriate.

a) What significant trends are revealed in the data?
b) What factors might contribute to any program differences compared to the College data? See attachment for college-wide statistics.
c) What conclusions do you draw from this analysis that could form the basis for an action, objective or request for resources?

NOTE: In the absence of a research analyst, new data are not available to us this year. All data presented are copied from the 2006-2007 program review

a. The demographic data clearly show that the age-distribution for Biology courses differs from that of the WVC student body with the majority of students in Biology being in the younger age groups (<21 and 21-25). While these age groups represent about 60% of the student body, in Biology, these age groups make up nearly 80% of our classes. In terms of gender and ethnic background, the distribution of students in Biology matched the distribution of students for WVC as a whole.

b. The high ratio of younger students in biology can likely explained by the fact that the Biology classes are all UC/CSU transferable and is thus attractive to students who plan to transfer to 4-year colleges.

c. Biological knowledge is expanding at an exponential rate. A major factor in this explosion is the application of technology in the biological sciences. If the biology department is to continue to provide transfer applicable courses it needs to be able to keep up with the equivalent offerings in the UC/CSU system. Additional resources will be necessary to keep up with the technological advances in the field of the biology and thereby maintain equivalency with the UC/CSU system. As the technological requirements of teaching biology expand the UC/CSU system will surely upgrade to meet current standards, and so should we.

3. Using the success data from table III from previous program, add or revise as appropriate.

a) What significant trends are revealed in the data?
b) What factors might contribute to any program differences compared to the College data?
c) What conclusions do you draw from this analysis that could form the basis for an action, objective or request for resources?

NOTE: In the absence of a research analyst, new data are not available to us this year. All data presented are copied from the 2006-2007 program review

The average success rate (defined as the percentage of students who received a grade of C or better, or Credit, for the course) over the period under scrutiny is slightly Higher for the Biology department (69.3%) as compared to WVC as a whole (65.6%). This is partly attributable to the nature of Science courses (for example, the level of math content used in lectures/classwork) and the amount of content that is covered in the courses (as required in order to meet transferability requirements).

A more disturbing trend is the apparent decline in the success rate over time after peaking above 70% in 2003. This apparent decline in success rate may be partly attributable to the nature of Science courses (for example, the level of math content used in lectures/classwork) and the amount of content that is covered in the courses (as required in order to meet transferability requirements). The biology department has also recently seen a dramatic increase in demand for health career courses (i.e. anatomy) that is undoubtably driven by economic predictions and career outlook. It is feasible that some of these students are hastily entering a career track with inadequate preparation and/or are attempting these courses while maintaining a full time career with the consequent outcome.

Assessment of this trend could be done, to some extent, using criteria developed for the Student Learning Outcome (SLO) project (in development), but further assessment that examines more fully the potential causes for the change would be helpful. Unfortunately, such an exercise requires more time and funds than the Biology department currently has available.

4. Are there any data or factors (e.g. integration of technology; college, district, or state expectation or mandates) concerning staffing in the program, that suggest a need for increasing or decreasing program staff (e.g. permanent and associate FTE, permanent and hourly classified staffing or administrative staffing)?

NOTE: In the absence of a research analyst, new data are not available to us this year. All data presented are copied from the 2006-2007 program review

Additional resources, including FTE for both faculty and classified staff, could help to improve the Biology department in several ways. For example, with additional faculty, more sections of high demand courses (i.e. anatomy) could be offered to meet the rising demand and courses in non-traditional times (i.e. winter session and weekend courses) that reflect both the interests of the students and faculty could be developed and offered. Not only will additional faculty be required, additional classified staff will also be required if the Biology department is to expand.

Our current laboratory technician is an 11-month employee, while the department operates both year round and into the evenings. The hourly rate for hourly classified aides has steadily increased while the budget has remained the same. This has resulted in fewer hours of help that we can afford. The department has added three Health Science

lab courses to accommodate the high demand, without a significant increase in laboratory preparation personnel. Under current conditions this causes problems with efficient and consistent laboratory support and in vacation scheduling. Our current support staff (i.e. lab technician) simply cannot support more growth.

C. CURRICULUM SECTION (ANALYSIS AND RESPONSE)

1. Based on your program's curriculum information, as published in the most recent West Valley College catalog, what curriculum changes are anticipated in the next three years? (These changes could include major course revisions, curriculum deletions, new courses, revised or new options within a program, or proposed new programs.)

The biology department is currently working on updating course descriptions and has developed and submitted new courses to curriculum in order to expand our intersession courses (online curriculum and non-lab courses) and expand our field courses in Ecology. In light of current critical environmental concerns (including climate change), the biology department foresees strengthening and expanding courses covering ecological and environmental issues to meet increasing demand (see need for ecologist in section I).

The biology department has also recently observed a progressive increase in the demand for evening courses as the working student population has expanded in the past years. As such, additional night and evening sections have been added or are planned for the future.

With the availability of a sixth lab room (portable V9) the lab space limitation that has prevented the biology department form expanding its offerings has been diminished. We still have other hurdles to overcome before the department can grow effectively. Even with an additional lab room the current curriculum stretches department resources thin (faculty, support staff, lab resources and lecture facilities).

2. The attached excel document shows classes that have not been offered since Spring 04. Please list the courses you intend to submit to the Curriculum Committee by February 8th for de-activation prior to publication of the 08/09 catalog.

Bio 11L – Human Biology Lab

Bio 41L – Principles of Animal Biology Lab

Bio 45L – Microbiology Lab

Bio 47L – Human Anatomy Lab

Bio 48L – Human Physiology Lab

3. Considering the new course and program level Student Learning Outcomes that have been developed since the last program review:

   a) What relevant findings have been derived through the SLO assessment process since the last program review?
   b) What changes have been implemented, or are planned, based on the findings since the last program review?
   c) What conclusions do you draw from this analysis that could form the basis for an action, objective or request for resources?

NOTE: Please contact LeAnn McGinley (741-2402), Assessment Coordinator with any questions concerning SLOs.

Student Learning Outcomes were prepared for one of the larger courses in the biology department (bio 10) as a trial. Development and implementation of SLO assessment was then postponed during contract negotiations in

2006-2007. We have now implemented SLO assessments in this course that have provided encouraging evidence that student learning is being achieved. The development and implementation of SLO's in other biology courses is underway.

Assistance will certainly be needed to develop better assessment tools that can provide statistically quantifiable data and to perform the appropriate statistical analysis. The demands on the time of currently faculty do not allow for this kind of in-depth investigation.

D. EXTERNAL INFLUENCES SECTION (ANALYSIS AND RESPONSE)

1. If applicable, considering the effects of external influences on the program's purposes and goals:

   a) How do accreditation requirements, government regulations, advisory boards, labor market demand, transfer institution articulations or other external factors affect the program?
   b) How might these influences form the basis for an action, objective, or request for resources?

a) Because the courses currently offered are UC/CSU transferable (and accepted for credit by most 4-year universities), transfer institution articulations have an important and significant influence on the Biology program. It is imperative that WVC not only keep the Biology department informed, but should also seek active input and feedback from the Biology department of any proposals and/or proposed changes, as well as actual changes, in these areas.

In light of current critical environmental concerns (including climate change), the biology department foresees strengthening and expanding courses covering ecological and environmental issues to meet increasing demand.

b) To this extent, development and implementation of a process by which the feedback and input of the Biology department is solicited and used in policy decisions and/or actions can be improved.

If the biology department is to continue to provide transfer applicable courses it needs to be able to keep up with the equivalent offerings in the UC/CSU system. Additional resources will be necessary to keep up with the technological advances in the field of the biology and thereby maintain equivalency with the UC/CSU system. As the technological requirements of teaching biology expand the UC/CSU system will surely upgrade to meet current standards, and so should we.

E. STUDENT FACTORS SECTION (ANALYSIS AND RESPONSE)

1. What program changes or initiatives has the program implemented in the last three years to meet the needs of its student population?

(1) Responding to student demand the biology department has worked hard to increase the number of available course sections of anatomy, microbiology and physiology, in support of the high demand health care track. We have effectively doubled the number of anatomy sections, doubled the number of microbiology sections and hope to offer increased physiology section in the futures.

To accomplish this feat the biology department has expanded into an additional sixth lab (V9 in the "village"), hired an additional full time faculty member in anatomy and requested an increase in our base supplies budget.

(2) The biology department has recently observed a progressive increase in the demand for evening courses as the working student population has expanded in the past years. As such, additional night and evening sections have been added to the course offering.

F. SUMMARY AND CONCLUSION SECTION:

1. General conclusions and summary statement.

The Biology program has been exceptionally successful in meeting its basic goals of student enrollment and WSCH/FTE ratios. The biology department continues to have one of the highest WSCH/FTE ratios in the college. Differences in the demographic base of students in Biology courses as compared to WVC averages do not appear significant. The success rate of biology students is higher than the college average and retention rates of the Biology program are slightly higher than the WVC average.

2. Program Strengths:

The strength of the Biology program lies in its faculty, permanent and adjunct. The knowledge base of the faculty and their enthusiasm and commitment to teaching have been essential to the success of the program in attracting students and having students succeed in biology courses. Continuous evaluation of faculty and the curriculum have ensured that the content of the courses being taught not only satisfy Title Five requirements (including for UC/CSU transferability), but also ensures that the content is relevant and thereby engages students in the learning of biology. Student feedback on evaluation forms as well as comments to the instructors suggest that the Biology program has succeeded in increasing student awareness and understanding of biological concepts and, more importantly, the world in which they live in.

3. Program Challenges:

While the success and retention rates of the Biology program are not significantly different from WVC, the decline in success rates over the past few semesters is a trend that needs further attention. The department is considering possible causes, and potential solutions, to the drop; further assessment and analyses could be facilitated with assistance and additional resources from the administration.

G. ACTIONS AND OBJECTIVES SECTION

Based on the foregoing analyses and findings in Sections A. through F., what are the program's intended actions or objectives for the next three years?

We will continue to actively participate in the planning of the new lab annex and Science Math remodel. We have identified key factors that will limit any further growth in the biology program, the principle factors being the availability of teaching facilities, resources, faculty load and available staff / faculty. Through our participation and input hopefully some of these issues may be partially alleviated by the planned addition of a three-lab biology annex and remodel of existing facilities. Some of these issues have been partially resolved through the addition of a sixth biology lab in the portable "village". This has enabled the biology department to add additional sections of Anatomy (a course currently in high demand).

Timelines

Over the next three years, what are the program's timelines (in terms of predicted initiation and completion dates) for the stated actions or objectives?

With the retirement of a faculty member (an ecologist) we are dependent on adjunct faculty to teach courses in the environmental area of biology. The biology department is currently petitioning for one full time faculty position to fill the vacated position.

With the addition of microbiology and anatomy sections, coupled with the discontinuity in the lab facilities the lab support staff are overworked. We have become overly dependent on student hourly help to provide laboratory

support. This is NOT an effective solution. The financial and time investment for each new laboratory support staff person is substantial. An additional, fully trained and independently capable lab technician is required to provide continuity and consistently high quality laboratory preparation. The biology department is currently petitioning for

one full time classified position (lab tech) to provide a more consistent, trained and reliable workforce.

These needs will continue, even increase, as the planned new construction and renovation begins. Ground breaking on the first phase will (hopefully) occur in late 2007 or early 2008. Estimates suggest that construction and consequent dislocation of the biology department will extend over a 3 to 5 year timeline. Coping with the demands of operating a functional department during this project will likely preclude any "new" actions or objectives.

Which of these actions or objectives would be initiated and completed within the coming year, given adequate resources?

We hope be hiring one full time faculty position and one full time classified position (lab tech) in the coming year. We have not been approved for either position as of this writing.

We will continue our ongoing involvement in the SM construction and renovation projects in the hope that our concerns can and will be addressed regarding the needs of the biology department and the science and math division. The timing is, of course, contingent on the renovation projects timeline.

H. RESOURCE REQUESTS 2006-2007

1. Please indicate if any of the resource requests identified in the previous program review were funded through one or more of the various WVMCCD resource allocation processes that were available in 06 – 07 (e.g. FTE allocation, classified staff, one time funding, budget augmentation, facilities, Land Corporation):

Please complete the following table (leave blank if the answer is not applicable):

	FUNDED by WVMCCD?
Full-time faculty FTE: *One full time position - anatomy*	☒ Yes ☐ No ☐ Partially
Associate faculty FTE: *Click once here and type your response*	☐ Yes ☐ No ☐ Partially
Classified Staff FTE: *Click once here and type your response*	☐ Yes ☐ No ☐ Partially
Classified Hourly (in dollars): *The classified hourly budget has not kept pace with salaries. This has resulted in fewer hours of help that we can afford. A 10-15% increase in our current budget plus ongoing budget increases to match inflation are needed to sustain the biology department's hourly classified staff.* *Per last years budget allocation process (for the 2007-2008 budget year) an increase (approx 30%) in the department's classified hourly budget was allocated to offset increased costs AND support the additional anatomy and microbiology sections.* *Although this budget increase has been a great benefit, it is not the most effective solution to the support needs of the biology department. With the addition of microbiology and anatomy sections, coupled with the discontinuity in the lab facilities (labs in the SM division and in the village) the lab support staff are overworked. We have become overly dependent on student hourly help to provide laboratory support. This is NOT an effective solution. The financial and time investment for each new laboratory support staff person is substantial. An additional, fully trained and independently capable lab technician is required to provide continuity and consistently high quality laboratory preparation.*	☒ Yes ☐ No ☐ Partially
Administrative Staff FTE: *Click once here and type your response*	☐ Yes ☐ No ☐ Partially
Facilities (brief narrative description): *One of the greatest limitations the biology department (and Science Math division collectively) must contend with is the limited number of available teaching facilities (AKA lab rooms and lecture rooms). We are essentially running out of available space to offer additional sections even if we could staff them. We are well aware of the demand for additional course sections and could fill additional sections if we could offer them. The first essential step that must be taken to fulfill this potential is to add additional (not just new) lab and lecture space to the Science Math facilities. The addition of a sixth lab (V9) has alleviated the limitations on lab space, however lecture space is still restricted. We hope that the preliminary plans for the SM renovation will come to fruition and provide additional lecture space for the SM division.*	☐ Yes ☐ No ☒ Partially

Equipment (brief narrative description with estimated total cost): *Per last years budget allocation process (for the 2007-2008 budget year) an increase (approx 20%) in the department's equipment maintenance budget was allocated to offset increased costs AND support the additional anatomy and microbiology sections.*	☒ Yes ☐ No ☐ Partially
Supplies (brief narrative description with estimated total cost): *Per last years budget allocation process (for the 2007-2008 budget year) an increase (approx 15%) in the departments supply budget was allocated to offset increased costs AND support the additional anatomy and microbiology sections.*	☒ Yes ☐ No ☐ Partially
Staff Development (brief narrative description): *Click once here and type your response*	☐ Yes ☐ No ☐ Partially
Other (please specify): *to be determined*	☐ Yes ☐ No ☐ Partially

2. What have you been able to accomplish as a result of the resource obtained?
(e.g. improved retention success and persistence, improved equity, new SLOs, higher enrollment, new online or satellite campus classes….)

NOTE: The Program Review Committee realizes that in some cases, accomplishments and changes resulting from resource acquisition are too recent to be measurable. The current Program Review process is only one year old. Future reviews of funding requests will focus on accomplishments and change occurring over a two-year period.

The biology department has been growing over the last several years without significant increases in the resources available to it. In the last year the biology department had reached its limit and could no longer expand. The allocation of a sixth lab room and the hiring of an additional full time faculty member in anatomy has enabled the department to add additional sections of anatomy to its roster. This has increased the total enrollment on the department while meeting the needs of students and the community (the anatomy course is one of the first in the training of nurses).

Moderate increases in the department budget have also ensured that these added courses can be supported and adequately supplied with lab materials.

I. RESOURCE REQUESTS 2007- 2008

1. What **new or additional** resources are required to accomplish the stated actions and objectives?

Full-time faculty FTE: *With the retirement of a faculty member (an ecologist) we are dependent on adjunct faculty to teach courses in the environmental area of biology. The biology department is currently petitioning for one full time faculty position to fill the vacated position.*

Associate faculty FTE: *Click once here and type your response*

Classified Staff FTE: *With the addition of microbiology and anatomy sections, coupled with the discontinuity in the lab facilities (labs in the SM division and in the village) the lab support staff are overworked. We have become overly dependent on student hourly help to provide laboratory support. This is NOT an effective solution. An additional, fully trained and independently capable lab technician is required.*

Classified Hourly (in dollars): *The classified hourly budget has not kept pace with salaries. This has resulted in fewer hours of help that we can afford. A 10-15% increase in our current budget plus ongoing budget increases to match inflation are needed to sustain the biology departments hourly classified staff. However, hiring an additional full time lab technician (see above) would negate the need for increases in the classified hourly budget.*

Administrative Staff FTE: *Click once here and type your response*

Facilities (brief narrative description): *Planning for both the New Construction (Biology Annex) and Science Math Renovation projects is in progress. Supplemental funds for equipment up grades, plan modifications etc. will*

likely be part of the process.

Equipment (brief narrative description with estimated total cost): *The biology department has an extensive inventory of equipment, preserved specimens, models, charts, videos, glassware and miscellaneous lab supplies. We also have the largest collection of human cadaver material of any community college in northern California. Our current inventory indicates that we are currently using over 100,000 items with an estimated replacement cost of $5,000,000. Although our records are incomplete it is obvious that most of these materials were acquired over 30 years ago, much of it is outdated and no longer appropriate for a modern day course (especially in cell and microbiology), much is in various states of disrepair and some have a limited usable life (aka cadavers). Our current budget is insufficient to maintain all of the equipment that we use in our classes let alone replace it with updated materials. A reasonable estimate of funds needed to maintain the existing equipment inventory is 1% of total inventory cost.*

We, along with many other programs, have invested significant time and effort into the application of computer technology in the learning environment. Currently, many of our lab activities involve the use of computer technology to enhance instruction. Unfortunately, a characteristic of computer technology is its rapid growth. As a result we have found ourselves in a quandary. The computers we have are out of date and incapable of running the biology lab software/simulations available today AND they are big clunky machines that take up space hindering movement in the lab. These can and should be replaced with new computers at logical intervals (defined by the growth in computer technology). In addition, considerations to storage and classroom space when in the lab (a safety issue) should be considered in their replacement. Estimated cost for equipping each lab with Mobile learning Lab (carts with laptops) is $16,000 per lab room.

We also need to keep up with the latest technology, maintaining hardware and software and to support the newly offered classes (physiology, anatomy, and microbiology).

Supplies (brief narrative description with estimated total cost): *Part of the extensive inventory in the biology department (described above) is made up of expendable materials requiring continuous replacement. Glassware breaks, paper products are used up, contaminated test tubes and droppers must be disposed of, specimens get dissected etc., and costs keep rising. The biology department has made every effort to reduce our supplies expenditures and in emergencies we have even dipped into our own funds to purchase supplies. A 10-15% increase in our supplies budget plus ongoing budget increases to match inflation are needed to sustain the biology departments supplies needs.*

Staff Development (brief narrative description): *Click once here and type your response*

Other: *Click once here and type your response*

When completed, please save your file and e-mail (using the File: Send To menu) to tanya_hanton@westvalley.edu