A. Unit Under Review: Biology Department – Program Review

Program Evaluation Team: Stephanie Burns, Dan Clemens, Bonnie Moore, Scott Rose

Verification Team Members: Stephanie Grohs, Beth Hauscarriague, Solange Kada

B. Statement of Completion

The report was complete and easy to follow. Minor editing is needed and will be submitted to the Verification Team.

C. Strengths of the Program

After reviewing the report the Verification Team found the following:

- Highly qualified and dedicated faculty with a demonstrated commitment to high academic standards and excellence in teaching. Because of the high standards of the faculty, the program attracts and retains students who are highly motivated and goal-oriented.

- The new Life Sciences Building will provide a state-of-the-art learning and teaching facility. This new facility will serve to support the continuous growth and improvement of the Biology Program.

- Successfully improved coordination between full- and part-time faculty in the biology department by creating a mentoring program. This communication between faculty ensures consistency throughout the program.

- Committed to offering the most current curriculum by updating course outlines and defining SLOs. Raised academic standards in prerequisite courses so that students will be better prepared for and have greater success in higher-level biology courses.

D. Areas for Program Improvement

- More recent data is needed to determine the actual full-time/part-time faculty ratio. Data provided is from 2004-2005. Currently there are four full-time biology instructors. Three of the four are teaching at 100% load and some with overloads. The program will be unable to continue at its current rate of growth without additional full-time faculty to support the program.
• An unrealistic budget has been set for the department. Annually the budget is set at approximately $10,000 when in fact the costs of running the program exceed $39,000. These costs are only for materials for each course and do not include equipment maintenance and replacement.

• Outdated, damaged and insufficient equipment is in need of replacement. In order to maintain the high academic standards of the department, equipment must be maintained, updated and replaced on a regular basis. Money should be allocated in the budget for this ongoing need. Currently there is no provision.

• There has been an increase in the use of instructional technology. With the new Life Sciences Building technology will become even more critical to the program. Communication, support, and follow-up between the biology department and IT are essential to the success of implementing technology throughout the program.

E. Summary

It is evident that the faculty members of the biology department are committed to the success of the students they teach, serve, and mentor. Supplemental instruction and tutoring programs have been improved as well as the coordination and communication between full- and part-time faculty. As an example, in Fall 2007, biology faculty coordinated with the Math Science Engineering Achievement (MESA) Program to sponsor eleven NVC Students in Environmental Leadership Program (ELP). This program is coordinated with UC Berkeley.

The faculty recognize the importance of keeping the curriculum current. Course outlines have been revised (or are in the process) to include SLOs. The program-level student learning outcome matrix is complete. By October 2007, all course-level SLOs will be complete and current for every biology course. By 2008-2009 SLOs will be included in the course syllabi. The new Life Sciences Building will provide a state-of-the-art learning facility. However, without addressing the need for an adequate budget that ensures all courses have the needed supplies every semester, the biology department will continue to face the challenge of sustaining high academic standards without sufficient equipment and materials.

Finally, the biology department should be commended for their commitment to student success. Enrollments continue to grow despite the inadequate budget, low full-time to part-time instructor ratio, and insufficient equipment. Total student contact hours (WSCH) have increased by an average of 8.2% from 2004-05 to 2006-07. Total enrollments grew 8.2% during a four year period 2003 – 2007 while enrollments declined (6.2%) overall for Napa Valley College during the same time period. To sustain this enrollment and plan for growth, additional full-time instructors are needed.
INSTRUCTIONAL PROGRAM EVALUATION SELF-STUDY

PART 1

PROGRAM: Biology
DATE: May 5, 2007

1. MISSION
   A. Program Mission Statement
      The mission of the Biology Department is to educate students in the principles and methods of biological science, facilitate understanding of biological processes, promote recognition of the value of biological diversity, and empower students with scientific knowledge and technical skills to enable them to make productive contributions to society.

   B. The program falls within one or more of the following categories (check all that apply):
      - [x] Transfer/Degree
      - [ ] Vocational
      - [ ] Remediation
      - [ ] Non-Credit/Community Services

2. ACCREDITATION AND EXTERNAL REVIEWS
   A. Review the Accreditation Planning Summary and results of previous program evaluations. Discuss the recommendations of the review teams relevant to the program and how the program responded.
      Not applicable.

   B. Indicate the sources of information used in Question 2A.
      - [ ] Accreditation Self-Study Planning Agenda
      - [ ] Accreditation Final Report
      - [ ] Previous program evaluation recommendations
      Not applicable.

   C. Review the recommendations from any other licensing or accreditation bodies. Discuss the recommendations of the review teams relevant to the program and how the program responded.
      Not applicable.

   D. Reflect on your responses in Section 2, Accreditation and External Reviews, and write objectives for improvement on Schedule A, Program/Discipline Plan.
3. **Curriculum and Instruction**

A. Prepare/revise the [Student Learning Outcomes Matrix](#).
   
   See attached Student Learning Outcomes and SLO Matrix.

B. Review the course outlines of record:
   - Assess the appropriateness of the degree and certificate requirements.
     Biology faculty have reviewed the requirements and find them appropriate.
   - Evaluate the appropriateness of courses to the program.
     Biology faculty have reviewed the courses and find them appropriate.
   - Assess the appropriateness of current pre- and co-requisites and recommended preparation.
     Biology faculty have reviewed the pre- and co-requisites and find them appropriate.
   - Determine which course outlines have not been updated since the last program evaluation or within the past five years.
     See attached Curriculum Action Plan.
   - Write SLOs and Assessment Guides for the program and for each course.
     SLOs are included in the syllabi for some, but not all, of our courses. By 2008-2009, we will include SLOs on all course syllabi and the syllabi will be posted on instructor websites.

C. If you have not developed or revised program SLOs and course outlines for every course in your program, complete the Curriculum Action Plan. Follow the directions provided by the Curriculum Committee.

   See attached Curriculum Action Plan.

D. Describe how your program ensures that the syllabi for each instructor are congruent with the course outline. Describe what measures are taken if any syllabi are incongruent with the course outline.

   Beginning this year, we have assigned full-time instructors to oversee each course. For courses taught by part-time instructors, the course outline will be given to the part-time instructor before the semester, and the full-time instructor(s) will review the syllabus to ensure that it is reasonably congruent.

E. Assess Student Learning Outcomes

   - Explain the methods used to assess student learning outcomes. Which student performances were assessed and where the assessment occurred (please be specific).
     Student learning outcomes are generally assessed through a combination of written exams, laboratory practical exams, laboratory notebooks, written assignments, and/or evaluation of in-class performance and participation. The division chair, Dr. Bonnie Moore, attended the 2007 Strengthening Student Success Conference in San Jose, CA to gain insight into what other community college instructors are doing to help students succeed not only at the community college level but also beyond. At this conference, there were several sessions devoted to Student Learning Outcomes (SLOs) and assessment of SLOs. This experience will help Dr. Moore to advise the Biology Department in the implementation of department and course level SLOs and their assessment.
- Summarize your findings from the data.
  Data have not yet been collected. We will collect and analyze data during 2008-2009.

- How did you use the data findings and results to improve teaching and student learning?
  Data have not yet been collected. We will collect and analyze data during 2008-2009.

- An accreditation standard requires that the institution makes public expected learning outcomes for its degree and certificate programs. In what ways are the program’s expected learning outcomes made public? Check all that apply:
  - [☑] Syllabi
  - [ ] Catalog
  - [ ] Brochure
  - [ ] Articulation/Transfer agreements
  - [☑] Website
  - [ ] Other ______________________________

  Currently, SLOs are included in the syllabi for some, but not all, of our courses. By 2008-2009, we will include SLOs on all course syllabi and the syllabi will be posted on instructor websites. All full-time Biology faculty have developed or are currently developing websites.

F. Instructional Methods

- Discuss the methods used by the program to ensure that similar standards of academic rigor of the course outline of record are followed by all instructors in the discipline.

  The full-time Biology faculty meet on a regular basis to discuss course content and assessment to ensure that similar standards are maintained throughout the curriculum, and that courses in a sequence build knowledge in a logical fashion. Instructors that teach the same course communicate regularly to compare notes on topics covered, depth, and rigor of examinations and assessment.

- Discuss the instructional methods used by program faculty to address the diverse student population and to encourage retention and persistence.

  We treat each student as an individual and adapt our teaching approaches as necessary to meet individual student needs. We provide evening instruction for students who work during the day. We also provide programs such as Supplemental Instruction (SI) and Friday open labs to provide additional resources, tutoring, and study times to help meet diverse student needs.

- Discuss the instructional methods used by program faculty to address the differences in learning styles and to encourage retention and persistence.

  We employ a wide variety of pedagogical methods, including lectures, visual presentations, kinesthetic activities, and one-on-one student interaction to address different learning styles. Critical to this is the use of anatomical models, videos, histology slides, and computer-based learning tools for the visual and kinesthetic learners.

G. Review existing articulation agreements with high schools and other colleges. Are they adequate? Current? Effective? If not, what changes will be made?

  Not applicable.
H. Reflect on your responses in Section 3, Curriculum and Instruction, and write objectives for improvement on Schedule A, Program/Discipline Plan.

4. **COMMUNITY OUTREACH AND ARTICULATION**

A. What recruitment and/or community outreach activities has the program engaged in or initiated?

The Biology Department has participated in Earth Day activities on campus. Faculty members are on advisory committees for local non-profit societies, including Friends of the Napa River. There have been discussions with the director of the Connolly Ranch to cooperate with their educational programs. There are strong ties between the Biology Department and the MESA Program. Faculty members attend MESA meetings, have participated in the MESA Science Fairs, and are advisors for the local chapter clubs including the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS).

B. What has the program done to establish relationships with secondary schools and/or four-year institutions?

Biology faculty have accompanied transfer students on trips to visit local four-year institutions. There are plans to write a grant that would enable us to develop programs to train high school students in biotechnology fields. The department would like to strengthen ties with the local high school by participating in their science fairs. Faculty members have collaborated with the local elementary schools by bringing science lessons to the elementary classrooms.

In Fall 2007, Biology faculty coordinated with the Math Science Engineering Achievement (MESA) Program to sponsor eleven Napa Valley College students in the Environmental Leadership Pathway (ELP) Program. This program consists of a UC Berkeley course in Environmental Science Education, coupled with practical experience teaching K-12 students and a summer research internship. The ELP Program was created by the National Science Foundation to serve groups that are underrepresented in science, technology, engineering, and mathematics fields. A Biology faculty member, Dr. Dan Clemens, took the lead in developing an Independent Study (BIOL 199) course to enable the students to receive 3 units of NVC course credit for their participation in this program during Fall 2007. The Biology Department’s sponsorship of this program through the BIOL 199 course has encouraged and supported NVC students interested in pursuing teaching careers in science, provided community outreach to local primary and secondary schools, and increased Biology course enrollments.

C. What has the program done to establish relationships with the business community (if a vocational program)?

Not applicable.

D. How has the involvement of the advisory committee helped in improving and/or promoting the program? (vocational programs only)

Not applicable.

E. Reflect on your responses in Section 4, Community Outreach and Articulation, and write objectives for improvement on Schedule A, Program/Discipline Plan.
REVIEWS AND SIGNATURES

Part I of the program evaluation report is to be reviewed by program faculty and staff, signed by the program evaluation chair and division chair or supervisor, and forwarded to the Office of Research, Planning and Development by May 1.

Program Evaluation Chair Signature: ______________________________________

Division Chair/Supervisor Signature: ______________________________________

Date: ______________________________
INSTRUCTIONAL PROGRAM EVALUATION SELF-STUDY

PART 2

PROGRAM: Biology
DATE: October 18, 2007

5. STUDENT SUCCESS AND EQUITY
   A. Review the data on enrollment, retention, and successful course completion (and grade distribution, to be phased in). Discuss program trends relative to college-wide trends. Identify areas where disparity exists for any demographic group (ethnicity/race, gender, age, disability).

   Overall, enrollments are up for the Biology Program. From 2003-04 through 2006-07, total enrollments in Biology courses have increased by 8.2%, while enrollment for all Napa Valley College courses declined by 6.2 percent during the same period.

   Course-level retention and successful course completion rates have been high for the Biology Program overall and are similar to college-wide averages. For example in 2006-07, the course-level retention rate in Biology courses averaged 87.0% compared to a mean retention rate of 86.8% for all NVC credit programs. Similarly, successful course completion rate in Biology averaged 74.4% in 2006-07 compared to a mean of 74.9% for all NVC credit programs.

   Equity groups that claimed a significantly smaller proportion of enrollments in Biology courses from 2004-05 to 2006-07 compared with NVC credit programs overall include males, Whites, and students under 21, 40-49, and 50 or older. This is not surprising considering the large numbers of students enrolled in Biology courses as prerequisites for nursing programs. Students enrolled in the pre-nursing courses (BIOL 105, 218, 219, and 220) tend to be disproportionately women and somewhat older on average compared to the overall college student population.

   When comparing equity group retention rates for the Biology Program to the college as a whole, only one piece of data is significantly different: retention of disabled students in 2005-06. Biology’s retention of disabled students dropped by 2.7 percent that year, which probably accounted for this difference. Also, the relatively small sample size of this group tends to amplify differences expressed on a percentage basis. Disabled students accounted for fewer than 10% of all Biology students in 2005-06, so the 2.7% decrease in retention corresponded to only two out of 87 disabled students enrolled in Biology courses that year. Retention of disabled students did not differ significantly from the college-wide average the following year, so the 2005-06 difference does not indicate a persistent trend.

   B. Identify strategies used to identify and assist students at risk; discuss their effectiveness.

   Early assessment has proven to be one of the best ways to identify students at risk of not being successful in Biology courses. Instructors typically meet with students that have done poorly in these early assessments to discuss options available for these students. Some of the options provided to at-risk students have included Supplemental Instruction (SI), peer tutoring, MESA tutoring, note-takers, Open Lab periods, materials placed on reserve in the library (books and laboratory materials including microscopes, slides, bones and models), and materials provided on Biology faculty web pages. All of these options have been effective in helping to improve student success and the Biology Department plans to continue offering these to the students.
C. What has the program done to formalize links with support services for students?

Biology instructors have invited personnel (e.g., Rebecca Scott, Lauralyn Bauer, and Sheryl Fernandez) from the various campus student support services to come to Biology classes to discuss topics such as learning styles; available student support services on campus; and time management and study skills. Comments by students on instructor and course evaluation forms have mentioned these presentations by support service personnel as being helpful for student learning and success.

D. Review the full-time/part-time instructor ratio. Discuss trends, and needs.

Data from the 2004-05 academic year showed that Biology had full-time/part-time (FT/PT) instructor ratio of 63%-37% in Fall 2004 and only 48%-52% in Spring 2005. Data on FT/PT are not yet available for more recent years, but it is likely that the FT/PT ratio remains low, since Biology has added more sections of BIOL 218 and 219 and BIOL 105 lab beginning in Fall 2006 without any increase in the number of permanent, full-time faculty. The conclusion that the FT/PT ratio remains low is further supported by the observed increase in full-time equivalent faculty (FTEF) in Biology during 2006-07 (see Section 6B), despite no increase in full-time faculty that year. Given that college-wide target FT/PT ratio is 75%-25%, the Biology Department will need at least one additional full-time instructor to approach the 75%-25% target. Data on Biology enrollments, load, and productivity (see Section 6) also indicate a substantial need for additional full-time faculty in Biology.

E. Review the data on degree/certificate completion and any job placement data available. Assess the effectiveness of your program. (vocational programs only)

Not applicable.

F. Reflect on your responses in Section 5 Student Success and Equity and write objectives for improvement on Schedule A, Program/Discipline Plan.

6. Enrollment Trends and Student Satisfaction

A. Review the enrollment trends data, and describe recent trends. Are there external factors such as community demographics or the economy that have affected the program? What are the plans to address these factors?

Over the past four academic years from 2003-04 through 2006-07, total enrollment in Biology courses has increased by 8.2%, while enrollment for all Napa Valley College courses declined by 6.2 percent during the same period. Biology enrollments have fluctuated between years in parallel with college-wide trends, but in general, Biology enrollments have increased even during years when the college overall has experienced little or no enrollment growth. One exception to this was in 2005-2006, when Biology enrollment declined by 7.2%, while college-wide enrollment decreased by 6.6%. This was most likely due to the January 2006 flood, which affected student registration and attendance at the start of the Spring 2006 semester.

Most of the increases in Biology enrollment have resulted from the addition of more sections in certain high-demand courses including BIOL 105 (Human Biology, increased from 4 to 6 lab sections per year), BIOL 218 (Human Anatomy, increased from 4 to 5 sections per year), and BIOL 219 (Human Physiology, increased from 4 to 5 sections per year). The increase in the number of sections offered has not been accompanied by an increase in the operating budget.

One significant enrollment shift that has occurred has been an increase in BIOL 105 enrollment and corresponding decrease in BIOL 110 (Survey of Biology) enrollment. This has occurred because the department has eliminated BIOL 110 as an acceptable prerequisite for the pre-nursing courses (BIOL 218-219-220) and now requires BIOL 105 as the only acceptable prerequisite.
The most significant external factor that has affected enrollment in the Biology Program has been the widespread increase in demand for nurses and corresponding increase in numbers of students pursuing careers in nursing and other health occupations. Several Biology courses serve as essential prerequisites for nursing and other health occupations programs (see above), and the department has responded by adding sections in these courses. At present, we are operating at or beyond maximum capacity in these courses, given the existing limitations of facilities (laboratory space, cadaver facility, laboratory equipment, etc.) and qualified faculty to teach these courses. The opening of the new Life Sciences Building and hiring of additional, qualified faculty will enable the Biology Department to better accommodate student demand for these heavily impacted courses.

B. Review the load (WSCH/FTEF), productivity (FTES/FTEF), average class size, and financial data and describe recent trends.

- Total student contact hours (WSCH) in Biology courses increased by an average of 8.2% and full-time equivalent enrollment (FTES) in Biology courses increased by an average of 11.4% from 2004-05 to 2006-07.
- From 2004-05 to 2006-07, the average load (WSCH/FTEF) of Biology faculty exceeded the college-wide average by 37.6%. The Biology Program exceeded the institution’s target load of 525 in both semesters of 2005-06.
- From 2004-05 to 2006-07, productivity (FTES/FTEF) of Biology faculty averaged 37.6% greater for the Biology Program than for the college overall. The Biology Program exceeded the institution’s target productivity of 17.5 in both semesters of 2005-06.
- Load and productivity statistics have varied from year to year due mostly to changes in part-time instructor staffing of Biology courses. For example, from Fall 2005 to Spring 2007, FTEF in the Biology Department increased from 6.1 to 7.8, despite no increase in number of full-time Biology faculty. This increase in FTEF largely accounted for observed declines in program load and productivity in 2006-07. However, among the full-time Biology faculty, three of the four faculty members carried a 120% teaching load and one carried a 100% teaching load during 2006-07.
- Average class size in Biology courses was relatively stable from 2004-05 to 2006-06 (range from 38 to 41 students per class), and substantially exceeded the college-wide average (23-24 students per class).

In conclusion, workload and productivity of the Biology Program have been high and are likely to remain substantially above the college-wide average due to high program WSCH and FTES, the trend of increasing enrollment in Biology courses, large average class sizes, and the heavy teaching loads carried by the full-time Biology faculty.

C. Review the program’s schedule of classes and the student satisfaction survey results; discuss whether course offerings are scheduled appropriately to meet student need.

In the student survey, a number of students commented that they would like to see more sections of Biology courses, especially the impacted courses (BIOL 105, 218 and 219), and 17% of the students surveyed responded that the courses were not offered at convenient times. The Biology Department has recently added evening sections of BIOL 218 and BIOL 219 to accommodate students but the current lab space and teaching staff limits the ability to add more sections. When the new Life Sciences Building is completed, more sections of these courses may be offered.
D. Discuss the results of the student satisfaction survey, identifying areas for improvement and continued success.

The results from the student survey indicate that the majority of the students (72%) enrolled in Biology courses enrolled to fulfill degree requirements. Overall, the responses to the survey were positive. The majority of the students (85%) responded that they agreed or strongly agreed that the instruction in this program meets their needs. Eighty-eight percent responded that they agreed or strongly agreed that the syllabi for courses in this program are clear and easy to understand and that the course expectations are clear and 80% responded that the course material is presented fairly and objectively.

Sixty-one percent of the students responded they felt that the instructors in this program use a variety of teaching techniques to address different ways students learn and 68% of students responded that Biology courses provide an appropriate balance of lecture, group work and other activities. Student comments echoed these responses. In most Biology courses, there is a large amount of factual information to be conveyed to the students, and lecture is an appropriate and effective format for this. To aid the visual learners, PowerPoint slides, overhead illustrations, and video presentations are used in lecture. Many Biology courses (BIOL 110, 105, 218, 219, 120, 220, 240, and 241) have weekly laboratory sections, which allow the students to participate in hands-on activities to aid the kinesthetic learners. Computer-based learning tools have proven to be invaluable in the laboratory exercises. Digital data collection software is being used to acquire and process physiology data, and virtual dissection software is used to prepare students for their dissection exercises. The program needs more copies of software, hardware, models, and reference materials. There is a variety of other non-lecture activities, including field trips, homework assignments, group discussions, and group projects. Faculty members have met with Rebecca Scott and have invited her into classes to instruct the faculty and students in different learning styles.

Many students responded that the facilities were not appropriately equipped. The new Life Sciences building will address some of the students’ concerns, but the equipment, models, and instruments will still be in need of repair or replacement. We are requesting in our equipment request (see Schedule D) funds to purchase new anatomy and physiology models, prepared histology slides, and additional equipment for physiology and other Biology course laboratories.

E. What documented labor market demand does this program address? Does the program offer unique training (and not represent unnecessary duplication of manpower training) in the area? (vocational programs only)

Not applicable.

F. Reflect on your responses to Section 6 Enrollment Trends and Student Satisfaction, and write objectives for improvement on Schedule A, Program/Discipline Plan.

7. **PLANNING & BUDGET REQUESTS**

When answering the questions in this section, consider the staffing available and the existing budget, as well as the objectives that you included in Schedule A. Requests must be linked to the 2005-2011 NVC Strategic Plan Goals and Objectives. Schedule A will be your program plan and will be sent to your Division Chair/Dean to be included as part of the division plan. Complete Schedules B-F to justify requests for additional resources; please note “No request” on the appropriate schedule if you do not wish to request resources.
A. **Program/Discipline Plan**

Reflect on your responses to all of the questions above. If changes and/or improvements are needed, write objectives on Schedule A. Add other objectives that will further the mission of your program. The objectives must support the NVC Strategic Plan Goals and Objectives. In the right column of Schedule A, identify all additional resources that are needed to accomplish these objectives.

As described in previous sections of this report, the Biology Program successfully serves a large, diverse, and growing population of students. The department faculty carry heavy teaching loads, generate high total FTES, and maintain high student contact hours (WSCH) in comparison to institutional averages (see Section 6). Biology course enrollments and the number course sections offered have increased substantially during the past several years (see Sections 5 and 6). This has been accomplished without any net increase in full-time faculty and no increase in the annual operating budget for the department for more than ten years, despite major increases in the costs of laboratory equipment, specimens (such as cadavers and microbiology cultures), supplies, and technology.

With the completion of the new Life Sciences Building in 2008, there will be substantial improvements to and expansion of Biology classrooms and laboratory facilities. This will help to accommodate growing enrollments, enable more sections of impacted courses to be offered, and potentially attract more students to the Biology Program and to the college. In order to fully realize this opportunity, additional qualified staff, laboratory equipment, and instructional resources will be needed.

Therefore, the primary goals of the department over the next five years are (1) to gain additional full-time faculty to support program growth and maintain the integrity of the Biology Program; (2) to augment and update the department’s annual budget in order to meet the program’s true current and future operating costs; (3) to acquire additional resources needed to improve and expand the Biology Program; and (4) to identify further actions the department can take to enhance our mission of educating students and preparing them for future success.

Schedule A outlines the specific objectives and proposed actions that the department has identified that relate both to the NVC Strategic Plan Goals and the departmental goals described above.

B. **Staffing**

Summarize the staffing resource needs identified in Schedule A, the Program/Discipline plan. Discuss any changes needed. Complete Schedule B, Request for New Permanent Faculty and Staff.

The department is requesting two additional full-time faculty and one additional half-time instructional assistant. The most immediate need is for a full-time Anatomy and Physiology instructor because of the large number of sections of these courses currently being offered and further increases projected with completion of the new Life Sciences Building. The other staffing needs identified for the next five years include a full-time Survey of Biology/Botany instructor and an additional half-time instructional assistant. Further details and justification for these staffing requests are given in Schedule B.
C. **Operational Budget**

Are operational funds appropriate to enhance program success? If not, how would additional operational funds be used to enhance program success? Complete Schedule C, Request for Operating Budget Augmentation.

The department is requesting an annual instructional budget of $39,220 starting in 2008-2009. Currently, our budget is $10,000 but our spending for 2006-2007 was over $37,000 in supplies. The increase in spending is due to increases in the number of sections offered and increases in the cost of supplies. The increased number of sections offered has greatly increased the FTES for the college.

In the past, the disparity between our annual budget and actual expenditures has been offset partly by student lab fees and partly by additional funds provided by the college. We feel that Biology’s annual budget should more closely reflect our actual funding requirements. The breakdown in funding needed to teach the Biology laboratory courses projected for 2008-2009 is shown in Schedule C.

D. **Program-Specific Equipment**

Discuss the strengths and weaknesses of the program-specific equipment available to enhance program success. What needs remain? What strategies are planned to meet those needs? Complete Schedule D, Program-Specific Equipment Request.

The department currently has a variety of program-specific equipment including superior-quality microscopes, a good collection of anatomical models, good histology and microbiology slides, a well equipped microbiology lab, one functioning autoclave, one portable and one stationary video microscope setup, some new equipment for the physiology laboratory (e.g., micropipettors and spectrophotometers), and well preserved insect and shell collections in the zoology laboratory.

However, many of our anatomical models are worn or damaged, and most of the zoology and botany collections are old and inadequate. Our current supply of models and histology slides is insufficient to accommodate the increased numbers of students and sections of Biology courses, and additional equipment will be needed for the laboratories in the new Life Sciences Building. We also are requesting new equipment to offer more current laboratory exercises in molecular biology.

Requests for program-specific equipment and estimated costs of this equipment are provided in Schedule D.

E. **Technology**

Discuss the strengths and weaknesses of the technology available to enhance program success. What needs remain? What strategies are planned to meet those needs? Complete Schedule E, Technology Request.

Most of the projected technology needs for the new Life Sciences Building, including classroom computers, LCD projectors, DVD/VCR player, and document cameras, were included in the plan for the new building. Funding for this equipment should be provided though the existing bond; however if these funds are not available, additional funding will be required.

Items not covered under the new building plan which will help to improve our program include new microscope slide projection systems, additional copies of the virtual cadaver software for the anatomy lab, and additional physiology computer laboratory (iworx) systems.

Specific technology requests are outlined in Schedule E.
F. **Facilities Improvement/Renovation**  
Discuss the strengths and weaknesses of the physical resources available to enhance program success. What needs remain? What strategies are planned to meet those needs? Complete **Schedule F**, Facilities Improvement/Renovation Request.  
Construction of the new Life Sciences Building, scheduled to be completed in 2008, will greatly improve Biology classroom and laboratory facilities. Most of the department’s needs have been met through the new building project.  
Additional improvements not specifically addressed in the new building plans include the installation of biology displays in the new building for public viewing and educational purposes. Some existing displays can be moved from the current science building and remounted in the new building; however, many of our mounted specimens are deteriorating and some are preserved with toxic materials that must be disposed of safely.

G. **Professional Development**  
1) Compile the individual faculty and staff Professional Development Information surveys to summarize professional development accomplishments of your program.

2) Complete **Schedule G**, Professional Development Needs, to indicate the areas of focus identified for future faculty/staff development. **Note**: Budget requests for Travel & Conference should be addressed on **Schedule C**, Operating Budget Augmentation.  
Biology faculty are committed to maintaining high professional standards. To meet these goals, there exists a strong motivation among department faculty to stay informed with the latest and most recent conceptual, pedagogical, and technological advances. Faculty members have attended and will continue to attend a wide array of conferences, seminars and training sessions. Additional enriching sources such as periodicals, scientific websites and other current publications have been and will continue to be examined to enhance this flow of valuable information. Finally, the collegial attitude that currently exists within the Biology Department allows for knowledge and learned skills to be shared freely among members of the department, furthering the goal of maintaining high professional and academic standards.

H. **Learning Resources/Media Materials**  
Complete **Schedule H**, Learning Resources/Media Materials Request to identify learning resources (e.g., books, periodicals, DVDs) needed to enhance program success.  
The field of biology covers many complex topics and an enormous diversity of factual information. In order to address the needs of all learning styles, material must be presented in a variety of formats, including film. The majority of the media available to the Biology Department is in VHS format without closed captioning and therefore do not meet ADA regulations. We are requesting funds to purchase new DVD titles as well as DVD titles to replace VHS tapes we currently use regularly in the classroom. This will help retain disabled students and increase their success (Section 5A). In addition to the DVD media, we are also requesting additional copies of printed reference materials. Currently, as many as 30 students share one copy of important reference books. The periodicals available to the college through the library contain a few valuable titles including *Science* and *The Journal of the American Medical Association* but lacks periodicals that cover recent advances in molecular, cellular, and experimental biology. We are requesting that the college library subscribe to the *Federation of American Societies for Experimental Biology Journal (FASEB J)*. This will be valuable to students as well as faculty.
Program Evaluation Summary for Biology

Complete the following sections based on the completed program evaluation. This summary will be forwarded to the Planning Committee after the verification phase is complete.

Program Achievements (major achievements, changes, implementations, progress since last program review)
As described throughout this report, the Biology Program is a dynamic and successful academic program that serves a large, diverse student population. Over the past few years, the Biology Program has experienced substantial enrollment growth and has made significant progress on several fronts. Following is a summary of the major achievements of the Biology Program since the last program review. The Biology Department has:

- increased Biology course enrollments and the number of course sections offered;
- updated Biology courses and defined program- and course-level student learning outcomes;
- raised academic standards in prerequisite courses (such as BIOL 105) to increase student preparation and success in higher-level courses (BIOL 218, 219, and 220);
- improved the quality and continuity of the Biology majors’ course sequence (BIOL 120, 240, and 241);
- worked closely with the Campus Planning and Construction Department in designing the new Life Sciences Building;
- increased supplemental instruction and tutoring positions;
- improved coordination between full-time and part-time faculty in the department; and
- increased the use of instructional technology.

Strengths (unique characteristics, special capacities)
The Biology Department has many strengths, the greatest of which is our highly qualified and dedicated faculty. The commitment of the Biology faculty to excellence in teaching, high academic standards, and the ability of the faculty to work together as a cohesive group have greatly enhanced the Biology Program in recent years. Another key strength is the quality of the students enrolled in Biology courses. The program attracts and retains highly motivated, goal-oriented students, and plays an important role in advancing their academic and professional goals. Additionally, the new Life Sciences Building will soon provide a state-of-the-art learning and teaching facility that will support the continued growth and improvement of the Biology Program.

Challenges (concerns, difficulties, areas for improvement)
- Full-time faculty have heavy workloads.
  Part-time instructors who teach lab courses require a great deal of mentoring by full-time faculty to maintain consistency and standards. Not only do the Biology faculty have part-time mentoring assignments in addition to their own teaching, but most of the full-time faculty in biology have overloads as well.
- The Biology Department has a low full-time to part-time faculty ratio.
  Again, because part-time instructors who teach lab courses require a great deal of mentoring by full-time faculty to maintain consistency and standards, this is a strain on the full-time faculty.
Insufficient, damaged/worn, and out-of-date equipment.
Students are frequently frustrated by old, worn out equipment. In many cases, there is only one model or working piece of equipment for an entire class full of students, which makes learning difficult. Also, bones and skeletons are badly in need of refurbishment, and there is no money allotted for this.

Lack of adequate funding for equipment, supplies, and support staff.
Not only does the department need to purchase new equipment, but more support staff is needed to support the additional sections that have been added to the Biology curriculum to satisfy the demand for more nursing prerequisites. Faculty have had to take on much of the work that used to be provided by support staff.

Finding and retaining qualified adjunct instructors to teach anatomy, physiology, and botany.
These courses have extremely technical and labor-intensive laboratories, and the department has had much difficulty in finding qualified instructors to teach these courses. Also, when qualified instructors are found, it has been difficult to retain them because of the workload and lack of support staff provided.

Lack of consistent funding for required maintenance of equipment.
Microscope repair/maintenance (currently about $1,000 but this value should be increased) has always come out of instructional equipment money, so we generally have to limit the number of microscopes that we have serviced each year, depending on our budget. The service contract for the autoclave (about $5,000) has been a long-standing issue as well (the department does have money to cover this expense and has had to request funding from other sources each year).

**Process:** Briefly describe the process used to complete the PEP Report.
The full-time Biology faculty all met on a regular basis to discuss and work on the PEP Report. These meetings were very constructive. The full-time faculty wrote the report collaboratively, with each faculty member contributing to specific sections of the report. Dr. Dan Clemens was the lead writer and contact person for the PEP report. The PEP process has helped to further the collaborative spirit and common goals of the Biology Department, and the faculty will continue to meet on a regular basis to discuss, evaluate, and improve the Biology Program.

**Optional:** What additional data, if any, would have been helpful to effectively evaluate the program?
The program evaluation report is reviewed by the program faculty or staff, signed by the program evaluation chair and division chair or supervisor, and forwarded to the Vice President (Instruction or Student Services) or President, with a copy to the Office of Research, Planning, and Development by October 18, 2007 for the verification phase.

**Program Evaluation Chair Signature:** ______________________________

**Division Chair/Supervisor Signature:** ______________________________

**Date:** ______________________________

### VERIFICATION PHASE

The verification team will review the Program Evaluation Report for accuracy and completeness, and the process used to develop the report (see verification team duties). Once the report is verified and shared with the PEP team, will be forwarded to the appropriate Vice President or President (for administrative services).

**Verified on:** ______________________________

**Verification Committee Signatures:** ______________________________

### ACKNOWLEDGEMENT PHASE

The Vice President (or President for administrative services) reads and acknowledges the program and planning document and sends a letter to the program team and discipline/program faculty or staff, with copies to the Academic Senate President, the Planning Committee, and the President of the college (who will forward them to the Board of Trustees). The vice presidents and/or President will use program evaluation results to 1) base discussions and decision making on data and evaluation provided by program evaluation; 2) inform program planning; and (3) advocate for program needs.

**Vice President/President** ______________________________

**Date Letter Sent:** ______________________________

**Recommend review in 2 years:** Yes _____ No _____
## PROGRAM EVALUATION AND PLANNING

### STUDENT LEARNING OUTCOMES: PROGRAM LEVEL

#### BIOLOGY

<table>
<thead>
<tr>
<th>NUMBER AND TITLE</th>
<th>STUDENT LEARNING OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Scientific Method</td>
<td>Describe the scientific method as it applies to biology.</td>
</tr>
<tr>
<td>2. Structure-Function Relations</td>
<td>Relate biological structure to function at different levels of biological organization.</td>
</tr>
<tr>
<td>3. Microscopy</td>
<td>Demonstrate proficiency in the use of the compound microscope.</td>
</tr>
<tr>
<td>4. Energy and Molecules</td>
<td>Summarize the flow of energy, organic molecules, and water in biological systems.</td>
</tr>
<tr>
<td>5. Genetics</td>
<td>Outline the basic principles of genetics and describe the molecular basis of heredity.</td>
</tr>
<tr>
<td>6. Cell Division</td>
<td>Describe the processes of cell division involved in asexual and sexual reproduction.</td>
</tr>
<tr>
<td>7. Evolution</td>
<td>Articulate the theory of biological evolution and present scientific evidence that supports evolutionary theory.</td>
</tr>
<tr>
<td>8. Ecological Interactions</td>
<td>Evaluate ecological interactions between organisms and their environments.</td>
</tr>
<tr>
<td>9. Quantitative Methods</td>
<td>Use quantitative methods to analyze biological phenomena.</td>
</tr>
<tr>
<td>10. Scientific Writing</td>
<td>Communicate scientific information clearly and effectively in writing.</td>
</tr>
<tr>
<td>11. Health Applications</td>
<td>Utilize biological knowledge to enhance human health and quality of life.</td>
</tr>
<tr>
<td>12. Environmental Applications</td>
<td>Apply biological knowledge to inform rational decision-making and improve the global environment.</td>
</tr>
</tbody>
</table>
# PROGRAM EVALUATION AND PLANNING

## STUDENT LEARNING OUTCOME (SLO) MATRIX

### BIOLOGY

<table>
<thead>
<tr>
<th>STUDENT LEARNING OUTCOME</th>
<th>Scientific Method</th>
<th>Structure-Function Relations</th>
<th>Microscopy</th>
<th>Energy and Biomolecules</th>
<th>Genetics</th>
<th>Cell Division</th>
<th>Evolution</th>
<th>Ecological Interactions</th>
<th>Quantitative Methods</th>
<th>Scientific Writing</th>
<th>Health Applications</th>
<th>Environmental Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 103: Nutrition</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BIOL 105: Human Biology</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BIOL 110: Survey of Biology</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>BIOL 112: Environmental Studies</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>BIOL 117: Wildlife</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<td>X</td>
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<td>BIOL 120: General Biology</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>BIOL 190: Natural History</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BIOL 218: Human Anatomy</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>BIOL 219: Human Physiology</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BIOL 220: Microbiology</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BIOL 240: Zoology</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BIOL 241: Botany</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** BIOL 199 (Independent Study) and BIOL 298 (Selected Topics) are not included in this matrix because of the variable nature of these courses.
INSTRUCTIONAL PROGRAM EVALUATION SELF-STUDY

CURRICULUM ACTION PLAN

PROGRAM: Biology
Program Faculty: Stephanie Burns, Dan Clemens, Bonnie Moore, Scott Rose

DATE: March 8, 2007

1. COURSE REVIEW LIST AND TIMELINE

A. COURSES REVIEWED WITHOUT SUBSTANTIVE REVISIONS
   The following courses have been revised within the last five (5) years and/or do NOT require substantive changes to remain current.
   
   BIOL 105, 110, 199, 218, 219, 240, 220, 298
   
   Five of these courses (BIOL 105, 110, 218, 219, and 240) were submitted to the Curriculum Committee in Fall 2006, and the proposed revisions were approved. Biology 220 was last revised in 2004 and student learning outcomes are currently being added to the course outline. Biology 199 (Independent Study) and Biology 298 (Selected Topics in Biology) do not require revision.

B. COURSES THAT REQUIRE SUBSTANTIVE REVISIONS: DUE BY FALL 2007
   The following courses need substantive revisions to course description, content, objectives, assessment methods, assignments, or conditions on enrollment:
   
   BIOL 103, 112, 117, 120, 190, 241
   
   These courses have not been revised within the past five years. They are part of the core curriculum for our program and will be revised and submitted to the Curriculum Committee by members of the Biology Department faculty by no later than October 5, 2007 for inclusion in the 2008 catalog. The changes will go into effect in Spring 2008.

C. COURSES TO BE MOVED TO ARCHIVED OR OBSOLETE STATUS
   The following courses or course numbers are no longer relevant to our program. Those listed as obsolete are outdated course numbers that correspond to currently offered courses. Those listed as Archive are courses that are no longer offered and which will be moved to Archived status.

   **Obsolete**: BIOL 01, 02, 03, 04, 05, 07, 09, 10, 12, 18, 19, 30, 98, 99
   **Archive**: BIOL 11, 16, 20, 50, 119, 150, 151
2. **NEW COURSES**
   Our program has identified the need for an online version of a current course, Biology 110. Stephanie Burns will submit this proposal to the curriculum committee by February 2008 to be ready for the new catalog in Fall 2008.

   BIOL 110 - Online

3. **COURSE-LEVEL STUDENT LEARNING OUTCOMES**
   Our program-level student learning outcome matrix is complete, and course-level SLOs have been completed for the courses which were revised in Fall 2006 (see 1.A. above). Course-level SLOs are being developed for those current courses that are being revised or updated (see 1.B. above), and will be included in the proposed revisions to be submitted to the Curriculum Committee by October 5, 2007. Course-level SLOs will be entered into WebCMS for every current Biology course by October 2007.

4. **DEGREE OR CERTIFICATE REVISION TIMELINE**
   No changes are proposed to the current Biology course requirements for the Associates Degree (AA) in Natural Sciences. We do not currently offer any Certificate programs in Biology.
## PROGRAM/DISCIPLINE PLAN

### BIOLOGY

<table>
<thead>
<tr>
<th>NVC Strategic Goal #1 - 5</th>
<th>Program Evaluation Section</th>
<th>Objectives</th>
<th>Priority In Rank Order</th>
<th>Program Activities/Actions</th>
<th>Resources*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5A, 5B, 5C</td>
<td>1. Increase successful course completion rates, particularly for courses with relatively lower success rates (BIOL 105, 110, 218 and 219).</td>
<td>4</td>
<td>1a. Improve student preparedness by developing a new one-unit Biology preparation course that can be taken concurrently with BIOL 105 or 110. 1b. Maintain high academic standards in prerequisite courses to better prepare students for success in higher-level courses.</td>
<td>1a. No additional resources needed.</td>
</tr>
<tr>
<td>1, 2</td>
<td>5D, 6A, 6B</td>
<td>2. Increase the number of full-time Biology faculty and instructional assistants.</td>
<td>1</td>
<td>2. Hire additional full-time Biology faculty and instructional assistants.</td>
<td>2. See Schedule B.</td>
</tr>
<tr>
<td>1, 3</td>
<td>6D, 7D</td>
<td>3. Provide additional instructional resources to enhance student success.</td>
<td>2</td>
<td>3a. Purchase additional, updated laboratory equipment, anatomical models, botany and zoology specimens, and lab supplies. 3b. Improve the Biology library collection including access to current, major biology periodicals</td>
<td>3a. See Schedule D. 3b. See Schedule H.</td>
</tr>
</tbody>
</table>

* New requests should be defined on resource forms and included in the unit budget.

### NVC Strategic Goals
1. Increase Student Success
2. Establish, Apply, and Maintain College-Wide Standards of Excellence
3. Increase Access
4. Effectively Use Appropriate Technologies
5. Improve Facilities

### Program Evaluation Section
2. Accreditation & External Reviews
3. Curriculum & Instruction
4. Community Outreach & Articulation
5. Student Success & Equity
6. Enrollment Trends & Student Satisfaction

PAGE 22 OF 33
## Program/Discipline Plan
### Biology

<table>
<thead>
<tr>
<th>NVC Strategic Goal #1 - 5</th>
<th>Program Evaluation Section</th>
<th>Objectives</th>
<th>Priority In Rank Order</th>
<th>Program Activities/Actions</th>
<th>Resources*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>4. Maintain high academic standards in all Biology courses and consistency among course sections and within course sequences.</td>
<td>3</td>
<td>4a. Update all Biology course outlines every five years. 4b. Coordinate full-time and part-time faculty to ensure that course syllabi are congruent with current course outlines, and that academic standards are consistently high within the program.</td>
<td>4a. No additional resources needed. 4b. No additional resources needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Develop methods to improve assessment of student learning outcomes.</td>
<td>9</td>
<td>5. Department members are currently working on this, including participating in a conference on assessment of SLOs. Biology faculty will coordinate to implement SLO assessment in Biology courses starting in 2008-09.</td>
<td>5. No additional resources needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Promote professional development and continuing education of Biology faculty.</td>
<td>8</td>
<td>6. Encourage professional society membership and provide funding for conference attendance by Biology faculty.</td>
<td>6. See Schedule G.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Provide additional sections of highly impacted courses such as BIOL 105, 218 and 219.</td>
<td>5</td>
<td>7. The new Life Sciences Building will provide more classroom space to accommodate some additional sections of these courses. Additional, qualified faculty will be needed to teach these sections (see Objective 2 above).</td>
<td>7. See Schedule B.</td>
</tr>
<tr>
<td>3, 5 CONTINUED ON NEXT PAGE</td>
<td>5A</td>
<td>8. Improve access for students with disabilities.</td>
<td>7</td>
<td>8a. The new Life Sciences Building will provide improved access for students with physical disabilities. 8b. Purchase new media to comply with ADA requirements for the hearing-impaired.</td>
<td>8a. No additional resources needed. 8b. See Schedule H.</td>
</tr>
</tbody>
</table>
# PROGRAM/DISCIPLINE PLAN

## BIOLOGY

<table>
<thead>
<tr>
<th>NVC Strategic Goal #1 - 5</th>
<th>Program Evaluation Section</th>
<th>Objectives</th>
<th>Priority In Rank Order</th>
<th>Program Activities/Actions</th>
<th>Resources*</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>6D, 7E</td>
<td>9. Increase use of computer-based instruction, including computer applications for teaching and laboratory exercises in physiology and general biology classes.</td>
<td>6</td>
<td>9a. Acquire additional computers, hardware, and software for computer-based laboratories, and up-to-date equipment to support computer-based instruction.</td>
<td>9a. See Schedule E. Some computer equipment may be provided through bond funds for the new building. If needed equipment is not covered by bond funds, additional funds will be required.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td>10a. Continue to develop faculty web pages. 10b. Develop an online component for BIOL 110, 105 and 120</td>
<td>10a. No additional resources needed. 10b. No additional resources needed.</td>
</tr>
<tr>
<td>4</td>
<td>3F</td>
<td>10. Develop online resources within the Biology Program.</td>
<td>11</td>
<td>11a. Completion of the new Life Sciences Building will greatly improve Biology classroom and laboratory facilities. 11b. Purchase and install biology displays in the new building, including artwork, habitat displays, and life-mounts of local flora and fauna.</td>
<td>11a. No additional resources needed. 11b. See Schedule D.</td>
</tr>
<tr>
<td>5</td>
<td>6D, 7F</td>
<td>11. Update and improve Biology classrooms, laboratories, and displays in the new Life Sciences Building.</td>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**SCHEDULE A (CONTINUED)**
REQUEST FOR NEW PERMANENT FACULTY AND STAFF

Accreditation reference: Human resource planning is integrated with institutional planning. The institution systematically assesses the effective use of human resources and uses the results of the evaluation as the basis for improvement.

Project additional needs above and beyond the current status. Please include in your projected needs any known position that will be vacated due to retirement. List in priority order. Replacement positions are not guaranteed. Information will be used in the faculty and staff prioritization processes.

<table>
<thead>
<tr>
<th>Job Title and Justification</th>
<th>N/R*</th>
<th>FTE</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Anatomy/Physiology Instructor</td>
<td>N</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>The Biology Department currently has a part-time instructor and a full-time temporary instructor teaching Human Anatomy (BIOL 218) and Human Physiology (BIOL 219), in addition to two full-time instructors that teach these courses. Historically, it has been very difficult for the department to find and retain qualified adjunct faculty to teach Anatomy and Physiology. The department would like to change the full-time temporary position to a tenure-track position. There is very high demand for these courses, and the department will be able to add more sections of these courses once the new Life Sciences Building is completed, provided staffing is available. The high FTES &amp; WSCH generated by these courses and the low full-time to part-time faculty ratios in the program provide support for the addition of this new position.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Survey of Biology/Botany Instructor</td>
<td>N</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Biology currently has only part-time instructors teaching Survey of Biology (BIOL 110) and Botany (BIOL 241). Biology currently offers 7 sections of BIOL 110 per year and one section of BIOL 241 per year. The department feels that a full-time faculty member will energize and attract students to the non-majors survey course, and that the major’s Biology courses should be taught by a full-time instructor to better serve transfer student needs. The department predicts the major’s program will expand because of the increase in jobs in the areas of biotechnology and pharmaceuticals, and the new Life Sciences Building will provide the classroom availability for such expansion. The low full-time to part-time faculty ratios provide further support for the addition of this new position.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Instructional Assistant</td>
<td>N</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>The Biology Department has already added many sections to the schedule over the last few years and has had no increase in instructional support positions. The department feels that planned, additional sections for the future will not be possible without the addition of another support staff position.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*N=New, R=Replacement

Submitted By: ________________________  Approved By: ________________________

Budget Center Manager  President/Vice President
**REQUEST FOR OPERATING BUDGET AUGMENTATION**

Budget Center: 54310  
Activity: 6101

**Accreditation Reference:** Financial planning is integrated with and supports all institutional planning.

**Operating Budget**

This section is used to request and justify non-capital outlay additions to your department’s budget. This form applies only to Account Codes 113XX, 114XX, 523XX, 524XX, 54XXX and 55XXX. List in priority order.

<table>
<thead>
<tr>
<th>Account No. &amp; Description</th>
<th>Additional Amt Requested</th>
<th>Justification (Link to Plan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Instructional Material</td>
<td>$39,220</td>
<td></td>
</tr>
<tr>
<td>Justification: Currently our budget is $10,000 but our actual spending for 2006-2007 was over $37,000 in supplies. The increase in spending is due to increases in the number of sections offered and increases in the cost of supplies. The increased number of sections offered has greatly increased student access to high-demand courses and FTES for the college. The breakdown in funding needed to teach the Biology laboratory courses projected for 2008-2009 is shown below. This reflects an increase of one section per year above current (2007-2008) section offerings in BIOL 105, 218 and 219.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breakdown of Biology Budget per course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biology 105 (8 sections @ $600 per section)</td>
<td>$4,800</td>
<td></td>
</tr>
<tr>
<td>Biology 110 (7 sections @ $300 per section)</td>
<td>$2,100</td>
<td></td>
</tr>
<tr>
<td>Biology 120 (2 sections @ $600 per section)</td>
<td>$1,200</td>
<td></td>
</tr>
<tr>
<td>Biology 218 (6 sections @ $2,770 per section)</td>
<td>$16,620</td>
<td></td>
</tr>
<tr>
<td>Biology 219 (6 sections @ $400 per section)</td>
<td>$2,400</td>
<td></td>
</tr>
<tr>
<td>Biology 220 (5 sections @ $1,700 per section)</td>
<td>$8,500</td>
<td></td>
</tr>
<tr>
<td>Biology 240 (1 section)</td>
<td>$750</td>
<td></td>
</tr>
<tr>
<td>Biology 241 (1 section)</td>
<td>$750</td>
<td></td>
</tr>
<tr>
<td>Glassware, microscope parts, bulbs, etc.</td>
<td>$600</td>
<td></td>
</tr>
<tr>
<td>Office, dry erase, pens, etc.</td>
<td>$1,500</td>
<td></td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>$39,220</strong></td>
<td></td>
</tr>
</tbody>
</table>

| B. Non-instructional | $3,520 |
| Justification: Two members of the department are planning to attend the Conference on Experimental Biology to be held in New Orleans in 2009. The registration costs per attendee will be $350 plus airfare and hotel costs for five days and four nights (estimate $1,300 total per person). One department member is planning to attend the annual meeting of the Society of Integrative and Comparative Biology to be held in Boston in January 2009. The registration cost is $70 plus airfare and hotel costs for four days and three nights (estimate $920 total). |

Submitted By: ___________________________  
Approved By: ___________________________

Budget Center Manager  
President/Vice President
**PROGRAM-SPECIFIC EQUIPMENT REQUEST**

**Accreditation rationale:** Equipment supports student learning programs and services and improves institutional effectiveness.

Examples of program specific equipment include maps, skeletons, microscopes, artifacts, etc. They may be located in each classroom or centrally located in a workroom. For this request, consider equipment with a value greater than $200. All technology requests should be listed on Schedule E. List in priority order.

<table>
<thead>
<tr>
<th>Description</th>
<th>Estimated Cost</th>
<th>Estimated Annual Maintenance Cost</th>
<th>Justification (Link to Plan)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Instructional</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Equipment for 6 additional microbiology stations</td>
<td>$720</td>
<td>No annual maintenance cost</td>
<td>Justification: The current microbiology laboratory in Room 1832 has 24 stations. The microbiology laboratory under construction in the new Life Sciences Building will accommodate 30 students. Therefore, we need to purchase additional laboratory equipment, including Bunsen burners, ring stands, and inoculation loops and needles, to furnish the six additional microbiology stations.</td>
</tr>
<tr>
<td>2. Articulated skeleton</td>
<td>$300</td>
<td>No annual maintenance cost</td>
<td>Justification: We now offer a BIOL 105 laboratory; in the past, this course was a lecture-only course. The full skeleton is needed to instruct the students in the arrangement of the human bones. This hands-on model is an important aide for all students, and crucial for the tactile learners.</td>
</tr>
<tr>
<td>3. Prepared histological slides</td>
<td>$750</td>
<td>$100 per year replacement cost</td>
<td>Justification: Histological slides are necessary to prepare the health occupation students to identify tissues, cells and cellular features. New slides are needed to replace broken and damaged slides, to accommodate increased numbers of students in BIOL 105 and BIOL 218, and to supply additional laboratory classrooms in the new Life Sciences Building.</td>
</tr>
<tr>
<td>4. Botany specimens, models and plant presses</td>
<td>$650</td>
<td>No annual maintenance cost</td>
<td>Justification: The specimens available to teach the botany labs are currently inadequate. We have relied on part-time instructors to bring many of the specimens in from their own collections or from other institutions with which they are affiliated. This is not always feasible. The Biology Department needs to have good quality, basic specimens and equipment to teach an adequate botany laboratory course.</td>
</tr>
<tr>
<td>5. Aquarium equipment for zoology</td>
<td>$600</td>
<td>$25 per year maintenance cost</td>
<td>Justification: The presence of live animal specimens in the laboratory greatly enhances the learning experience in zoology and general biology classes. Currently, there is a very small and inadequate marine tidepool setup that temporarily supports live organisms collected by the instructor. This setup is stored in the cadaver room to maintain proper temperature, and must be moved manually into the laboratory for classes. This greatly limits the number of students that have access and time available for students to observe these organisms. A larger, more permanent setup that includes a refrigeration and water circulation system will allow the tidepool environment to be kept in the zoology/general biology laboratory in the new Life Sciences Building.</td>
</tr>
<tr>
<td>6. Disarticulated skeleton</td>
<td>$400</td>
<td>$50 per year bone repair cost</td>
<td>Justification: Disarticulated skeletons are an essential part of the Human Anatomy laboratory. Our current skeleton specimens are heavily used, and many of the bones are badly worn or damaged. We need additional disarticulated skeletons, and to repair damaged skeletons, to accommodate the increased number of anatomy students and sections currently and in the future.</td>
</tr>
<tr>
<td>7. Electrophoresis equipment</td>
<td>$5,350</td>
<td>No annual maintenance cost</td>
<td>Justification: In order to instruct the students in current techniques that are used to isolate and analyze DNA and protein samples, electrophoresis equipment is essential. Currently, we have one electrophoresis set we have used to develop laboratory exercises for the BIOL 120 and BIOL 219 courses. A minimum of four sets is needed to adequately furnish a laboratory course. It is important that our students majoring in science be familiar with this current technology.</td>
</tr>
<tr>
<td><strong>B. Non-instructional</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Submitted By: ___________________________ Approved By: ___________________________

Budget Center Manager President/Vice President
Accreditation reference: Technology planning is integrated with institutional planning. The institution assures that any technology support it provides is designed to meet the needs of learning, teaching, college-wide communications, research, and operational systems.

In order to determine the feasibility of your idea, it is necessary to consult with the Information Technology (IT) Department. It is important that all computer related technology be centrally coordinated. This will allow the IT Department to know the full picture of the need, to plan for adequate capacity of equipment and infrastructure, and to ensure standardized equipment is purchased, if possible. It is equally important that all technology requests are consistent with the NVC Technology Plan.

List in priority order.
Provide a general description of the project that includes:
1. The equipment needed, students and/or staff who will be served, and how often it will be used.
2. Will installation and maintenance support be required?
3. Where will the equipment be located? Will space need to be modified?
4. Describe the infrastructure requirements (i.e. network, power, connectivity, security, etc.)
5. Software support needed (i.e. new licenses, upgrades, system integration, ongoing support)
6. Is additional furniture necessary?
7. Useful life of equipment – when will the equipment need to be replaced?

1. Desktop computers for the new Life Science Building (24 total, 6 per laboratory classroom).
   The planning for the new building includes six computer workstation in each of the laboratory classrooms. These will be used in all Biology classes for computerized laboratory exercises and/or for computer-based instruction. Funding for these computers may be provided though the existing bond; however if these funds are not provided, additional funding will be required.

2. LCD projectors with dedicated, networked computer stations (4 total).
   The planning for the new building includes LCD projectors in each of the new classrooms, with a dedicated, networked computer station connected to the LCD projector. These will be used for instruction in all Biology classes. Funding for these projectors will likely be provided though the existing bond; however if these funds are not provided, additional funding will be required.

3. DVD/VCR players (4 total).
   The planning for the new building includes DVD/VCR players in each of the new classrooms. These will be used for instruction in all Biology classes. Funding for this equipment may be provided though the existing bond; however if these funds are not provided, additional funding will be required.

4. Document cameras (4 total)
   The planning for the new building includes document cameras in each of the new classrooms. These will be used for instruction in all Biology classes. Funding for this equipment may be provided though the existing bond; however if these funds are not provided, additional funding will be required.

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5. Microscope slide projection systems (2 total).
   Microscope slide projection is used extensively in the anatomy, human biology, and general biology teaching laboratories. Our current analog systems are fairly outdated, have mediocre resolution, and one of the systems does not interface with an LCD projector. Two new systems, each consisting of a digital camera and microscope adapter unit, will enable us to offer superior microscopic slide projection in the anatomy and general biology/zoology/botany laboratories. We will retain our existing units for the physiology and microbiology classrooms.

6. Virtual cadaver software (5 copies of software or site license)
   We currently have one copy of the virtual cadaver program that is used by all of our Human Anatomy students. This software has proven invaluable in preparing students for their actual cadaver dissection, as well as providing an excellent resource to aid students preparing for exams. The additional copies of the software will enable the program to be available on all of the Anatomy classroom computers in the new Life Sciences Building, which will greatly improve student access to the program.

7. Physiology computer laboratory (iworx) systems (4 total).
   Currently, we have five iworx lab stations (including analog-digital conversion hardware, measuring devices, software, and laptop computers) which are used by approximately 30 students in the Physiology laboratory. Four additional setups will enable us to have smaller, more productive work groups in the laboratory. The computers proposed in Item 1 above will interface with these systems. Purchase of these additional systems will also allow other Biology courses to incorporate computer-based laboratory exercises.
FACILITIES IMPROVEMENT/RENOVATIONS REQUEST

Accreditation reference: Facilities support student learning programs and services and improve institutional effectiveness. Physical resource planning is integrated with institutional planning.

This request is for small capital construction projects such as remodeling a small area, reconfiguring walls, building shelving, etc. Generally, projects should be under $5,000. Larger scale projects will be considered in bond construction and renovation plans.

In order to make sure that your idea meets legal requirements or is even feasible to do, we ask that you consult with the Director, Facilities Services, and address the following items on the form.

List in priority order.
Provide a description of the project that includes:
1. How the project supports the mission and objectives of your program
2. Project description
3. Location of the proposed project
4. Health and safety impacts of the project
5. On-going maintenance that will be necessary

1. Installation of new biology displays for the Life Sciences Building.
   In order to visually enhance the new Life Sciences Building and promote student interest in biology, we propose to install attractive and diverse biology displays in the entryway of the new building and in the new classrooms. These displays will include framed artwork, interpretive displays, and life-mounts of regional flora and fauna.

As a part of the process of moving into the new building and installing the new biology displays, several of our existing mounted and preserved specimens will need to be disposed of properly. This must include the safe disposal of toxic chemicals such as arsenic and formaldehyde that were used to preserve old animal specimens.

Cost estimates will be provided for priority projects only.

Submitted By: 

Approved By: 

___________________________   __________________________
Budget Center Manager      President/Vice President
SCHEDULE G

PROFESSIONAL DEVELOPMENT NEEDS

Accreditation reference: The institution provides all personnel with appropriate opportunities for continued professional development, consistent with the institutional mission and based on identified teaching and learning needs.

Please identify the professional development needs required for faculty and staff to stay current in the discipline, office technology, diversity, safety, instructional methods, and other areas. Specific training and estimated number of attendees are requested.

1. What training needs have been identified from your program review?

   Training in new and recent technologies to keep up with the latest developments in the biological sciences
   - Two full-time faculty would like to attend the 2009 Conference on Experimental Biology in New Orleans, and one would also like to attend the 2009 meeting of the Society of Integrative and Comparative Biology in Boston.

2. What pedagogical training needs have been identified in your program review?

   Workshops and seminars with pedagogical issues (e.g., adult learning theories; diversity issues; managing students with test and other learning anxieties; providing favorable learning environments in biology laboratories with students who have disabilities)

3. What types of technology does your program use? What technology training needs have you identified?

   - Software programs for use in labs
   - Recombinant DNA technology including electrophoresis
   - Computer based instructional technology including PowerPoint, NVC faculty web pages and WebCMS

4. What are the leading publications specific to your discipline and/or program?

   - Journal of the American Medical Association
   - New England Journal of Medicine
   - Scientific American
   - Emerging Infectious Diseases
   - Science
   - Nature
   - Journal of Experimental Biology

Submitted By: ___________________________   Approved By: ___________________________

Budget Center Manager      President/Vice President
**LEARNING RESOURCES/MEDIA MATERIALS REQUEST**

**Books including Reference:**
Number of titles to add: 3

Areas to consider for maintaining and developing a collection that supports this course and corresponding assignments: Titles that provide: a multi-cultural perspective to the topics covered in the course; gender perspectives on subjects; a literary, dramatic, or fictional perspectives for students to explore; or titles that provide biographical information on innovators, leaders, or historic figures in the discipline.

**Recommendations/ Comments:**
2. F.H. Netter’s *Atlas of Human Anatomy* (2006). Cost: $76. This is one of the most widely used human anatomy atlases and is an invaluable reference for dissection. Currently, the department has only the first edition of this atlas (1989) and students share two copies of the atlas. A new, up-to-date copy is needed to increase student access to the material.

**Estimated cost for new materials:** $300 (includes tax and shipping)

**Periodical Titles:** (Newspapers, Journals, Magazines)
Number of titles to add: 1

**Recommendations/comments:** The offering of periodicals in the library is inadequate for students to research current advancements in biological science. A subscription to the *Federation of American Societies for Experimental Biology Journal (FASEB J)* will allow students and instructors to research recent findings in biology.

**Estimated cost for new materials:** An institutional online subscription costs $786; a print and online subscription costs $845

**Electronic Databases and Indexes:**
Number of databases to add: None at this time

**Recommendations/comments:**

**Estimated cost for new materials:**

**Media Collection (closed-captioned or DVD):**
Number of titles to add: 7

**Recommendations/comments:** The department needs to purchase new DVDs that cover current methodologies and discoveries in biology. The field is constantly evolving, and current titles are crucial to keep our students up to date. Many of the current media titles in the collection are outdated, in VHS format, and do not meet the ADA closed-captioning requirements for the hearing impaired. These visual aids greatly enhance the understanding of complex issues in biology for all students and are essential for the visual learners.

**Titles to be purchased:**
1. BBC: *Parasites and Their Human Hosts*. 3 DVDs. Cost: $390
3. *Investigations in Microbiology: Molecular Biology*. Cost: $150
5. *Deep Sea*. DVD. Cost: $21

**Estimated cost for new materials:** $790 (includes tax and shipping)
LEARNING RESOURCES/MEDIA MATERIALS REQUEST

Yes X No__ Are library/learning resource service hours adequate for this course/program?

Yes X No__ Is the quantity of materials sufficient for students within needed time frame?

Yes X No__ Will library/learning resources assignments be used in your course?

Yes X No__ Will this course/program require the assistance of library faculty for orientations or other information competency instruction?

I would like to meet with a Librarian for developing a plan for selecting and adding materials to the Library or Media Center.

To keep the collection reflecting current knowledge, I will alert the librarians of new developments in my field and send suggestions of books and other materials to be ordered.