Life Science Academic Unit Plan

Division: Science/F&CS Academic Year: 2010-2011 Division Chair: Joyce Parker

Executive Summary

Much progress has been made in meeting our six-year program review targets. Student Learning Outcomes have been established and are being assessed in Human Anatomy, Human Physiology, General Microbiology, General Biology, Medical Terminology, Human Biology and Biology 101. In this past year, our Associates Degree Program in Biology has attracted new students to our campus. To improve the quality of our existing programs, we have purchased some new prepared slide sets for the Oceanography, General Biology and Microbiology laboratories, a Mini Trans-blot Module for the Majors Biology course, a new copy machine, and new microscopes for the Human Physiology laboratories. Looking ahead to the future, the design of our new Life Science building is complete and has been forwarded to DSA. Once the new building is completed, we would like to expand our course offerings and offer a superior learning environment for our students. We will also investigate grant-funded opportunities to expand our course offerings and/or improve our existing courses. A possible expansion of our course offerings would be a new Field Biology course that would appeal to both biology majors and general education students.

During the Spring of 2010 the Department established the following program student learning outcomes.

1) **Students comprehend and convey scientific methodology:** Students will be able to comprehend and describe science as a process of generating knowledge that relies on testable hypotheses, verifiable data, and evolving theories that explain natural phenomena.

2) **Students apply scientific methodology to investigate nature:** Students will be able to design and modify experiments, make accurate observations, and apply quantitative and qualitative strategies to interpret numerical and graphical data.

3) **Students can evaluate the validity and limitations of scientific theories and claims:** Students will be able to research, critically read, synthesize and interpret scientific literature to analyze biological and other related scientific processes for increased understanding and application to personal, professional, and world issues.

4) **Students can assess the relevance and application of science in everyday life:** Students will be able to apply fundamental concepts in the biological sciences to make informed decisions and engage meaningfully in ethical issues that involve science and technology.

5) **Students demonstrate continuous academic preparedness:** Students will be able to utilize current and emerging computer and related technologies to continue growth and development

in the life sciences leading to potential career and professional pathways.

Activities Description Narrative: please describe suggested activities, including grant proposals to be written, new course or program initiatives, or program viability studies in priority order.

1. Purchase a service contract for the Konica copier used in Life Sciences.
2. Continue to organize and clean the Life Science Department building, including stock room and storage rooms. Unused, outdated and nonfunctional equipment will be removed for disposal.
3. Hire an additional laboratory technician to prepare laboratory materials and set-up for the expanded course offerings in our department.
4. Renew a service contract for the microscopes in all of the science laboratories to maintain the quality and precision of the instruments.
5. Continue participation in meetings related to our new science complex.
6. Purchase new anatomical models, skeletons, and bones to replace broken items. We have increased the number of anatomy sections offered to students, but have not increased the number of models and bones required to properly teach these sections. (See list below.)

   4 plastic vomer bones (Wards 82w 3589 $24.95 each)

   4 plastic palatine bones (Wards: 82w 3592 $22.50 each)

   4 articulated skeleton (Wards: 82w 3300 $339)

   2 respiratory system models (Wards: 81w 3342 $269 each)

   2 urinary system model (Wards: 81w 1048 $430)

   2 lower jaw model (Wards: 81w 1111 $245)

   2 larynx, trachea, bronchi model (Carolina: fa-56-6914 $535)

   4 human muscular figure (Carolina: fa-56-6645 $1,350)

   2 stomach model (Carolina: fa-56-6893 $142)

   2 pancreas model (Carolina: fa-56-6908 $235)

   6 heart models (Wards: 81w 3015 $299 each)

7. Continue recruitment of new students into the Biological Science degree program.
8. Review new software for application in biology laboratories and/or tutorials.
9. Purchase laboratory equipment to expand experiences for Biology majors in Biology 101, 102, and 103. See attached list of needed equipment.

Equipment	Quantity	Vendor	Price	Total
Thermal Cycler **Examine DNA structure and replication. Prepare DNA isolation and amplification by polymerase chain reaction (PCR)**	1	Bio-Rad	4,000.00	4,000.00 **4.000.00**
Electrophoresis Power supplies **Prepare gel electrophoresis of PCR products, assess detection of polymorphism, and measure allelic frequencies.** **Describe and perform DNA analysis using restriction enzymes and gel electrophoresis. Comparison of nucleotide and protein sequences.**	2	Wards	450.00	900.00 **900.00**
Polyscience 2L shallow Digital water bath Digital dual water bath 5.5L Cryo-safe cold box **Many labs required precise temperature control for reactions to take place and/or require measurements at different temperatures. To prevent temperature-sensitive reagents from breaking down.**	1 1 6	Daiger Daiger Modern Biology	700.00 850.00 50.00	700.00 850.00 300.00 **1850.00**
Incubator/shaker Bellco orbital shaker **To perform bacterial transformations. Preparation, isolation and purification of proteins in bacterial cells.**	1 1	Wards Carolina	2,750.00 1250.00	2,750.00 1250.00 **4000.00**
pH bench-top meter **Many solutions and reagents must be prepared at an specific pH**	1	Carolina	950.00	950.00 **950.00**
Cold-water aquarium	1	Carolina	5,000.00	5,000.00

To keep and maintain marine invertebrates for fertilization and embryology labs				**5,000.00**

SLO Assessment Results Narrative: please describe assessment activities that support proposed unit initiatives.

We have completed the assessment tools for Biology 102 and 103. We are in the process of writing the assessment tools for Oceanography 12 and Environmental Science 2 with the goal of beginning assessment in spring of 2011. We are also in the process of assessing the following courses: Human Anatomy, Human Physiology, Biology 3, Microbiology, Biology 101, Biology 5 and Medical Terminology.

Staffing Implications: if any request will require additional classified support or training, please describe its extent.

Hire an additional laboratory technician to prepare laboratory materials and set-up for the expanded course offerings in our department. See attached report to support need for this position.

Technology Implications: if any request involves technology, please describe its impact on the network, licensing, repair, training and support.

All laptop computers in the Life Science Department require updating from Windows 2003 to Windows 2007. Additionally, many of the laptops require repair or replacement.

LACCD Individual Lab Counts and Full/Part Time Lab Techs

(Labs Include Anatomy, Biology, Microbiology, Physiology)

College	#LAB	FT	PT
Harbor	28	1	0
Mission	28	2	0
East LA	50	2	0
Southwest	21	1	1
Pierce	40	3	0
Valley College	45	3	0

Science

Discipline ID #	Department Priority (1 to 99)	College Strategy Supported (separate columns if two)		tudent Success Initiative	Technology Access	Department Objective (link to Program Review)	Proposed Activity	Brief Summary of SLO Assessment Results (See attached forms)	List Other Supporting Documents/Links Attached (E.G., WSCH, Wait Lists, Retention, Environmental Scans)	Resources Required (list faculty, equipment, etc.)	Estimated Total Cost and Source (E.G., Program 100, VTEA, etc.)
80	1	6.2	1.5				Purchase a service contract for the Konica copier acquired Fall 2009			Block Grant	$3,000- $4,000
80	2	1.3	1.5 6.2			New Emerging need	Establish a service contract for the microscopes in all of the science laboratories to maintain the quality and precision of the instruments.			Program 100	$4,000
80	3	6.2	1.5			New Emerging need	Purchase laboratory equipment to expand practicum experiences for majors in Biology 101, 102, 103 Polyscience 2L shallow digital water bath; digital dual water bath 5.5L; Cryo-safe cold boxes (6) (Many labs require precise temperature control for reactions to take place and/or require measurements at different temperatures to prevent temperature sensitive reagents from breaking down.) Thermal Cycler (Purpose: Examine DNA structure and replication; prepare DNA isolation and			Proposition J	$12,000- $15,000 $850 $300 $1,850 $4,000

							amplification by polymerase chain reaction (PCR) pH bench-top meter (Purpose: Insures solutions and reagents are prepared at a specific pH) Incubator/Shaker Bellco orbital shaker to perform bacterial transformations. Preparation, isolation, and purification of proteins in bacterial cell				$1,000 $4,000
80	4	2.1,	1.1, 1.2, 2.2, 2.3			New emerging need	Continue recruitment of new students into the Biological Science Degree Program.		Work with campus high school recruiter; distribute Biology majors pamphlet		N/C
80	5	6.2	1.3 1.3 1.5			New emerging need	Catalogue and evaluate the existing collection of anatomical models and bones and purchase replacement and additional specimens				$14,000
80	6	1.3	6.2			New emerging need	Continue to participate in planning meetings related to the new science complex			Proposition J	N/C

80	9	1.5	1.1, 1.3 2.1 7.4 7.5				**Increase number of labs to meet student demand by filling 0.5 lab tech position to prepare and set-up laboratories**			Program 100	$30,000
80	8						Review new software for application in Biology laboratories and/or tutorials				N/C
80	9						Continue to organize and clean the Life Science Department classrooms, stock room, and storage areas			Faculty donate time to continue the reorganization and cleaning of said areas	N/C