

El Camino College

2011 Health Sciences Program Review
Life Science Department
Natural Science Division

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Life Science: 2011 Health Sciences Program Review

I. Overview of the Program

Program description and mission

The Health Sciences program includes courses in anatomy, physiology, and microbiology that are required for science majors and non-majors completing prerequisites or students entering health care field programs. These courses meet the educational needs of our diverse community and provide a comprehensive lower division curriculum for science majors preparing to transfer to 4-year universities and those enrolled in the honors program. They allow a student to pursue an A.S. degree in Biology, General Science, Laboratory Technician (Medical), Pre-Dentistry, Pre-Medicine, Pre-Nursing, Pre-Optometry, or Pre-Pharmacy. Student seeking certificated degrees in Radiologic Technology and Respiratory Care also take courses in this program.

Our excellent faculty is well-qualified to teach the courses in the Health Sciences program. They maintain rigorous academic standards in their classes while providing academic support for students in the form of open labs and tutoring. The life science classrooms are equipped with one technology station with internet access for faculty use.

The faculty and students of the Health Sciences program are involved in campus-wide activities, such as Onizuka Space Science Day, which foster a positive campus climate and outreach to the community. They can be science club members and also participate in the honors transfer program.

The Mission of the Life Sciences for the Health Sciences Program is to offer quality educational opportunities for students by providing academically rigorous courses that prepare students for admission to science, health professions, and nursing programs. These courses qualify towards earning an associate degree and meet general education requirements.

Offered degrees/certificates

Our program allows students to earn an A.S. degree in Biology, General Science, Laboratory Technician (Medical), Pre-Dentistry, Pre-Medicine, Pre-Nursing, Pre-Optometry, or Pre-Pharmacy. Students depend heavily on the courses in our program to ultimately obtain a degree in Nursing, Radiologic Technology, and Respiratory Care.

Status of recommendations from the prior Program Review

In the last four years we have been able to successfully meet the following recommendations for the Health Sciences Program:

1. **Obtain the financial support needed to acquired a cadaver-** In February 2011 a female cadaver was obtained from the UCI Willed Body Program using Block Grant funds.
2. **Hire full-time anatomy instructors-** One full-time Anatomy & Physiology instructor was hired for Fall 2011, to replace faculty member Leigh St. John.
3. **Develop student learning outcomes and assessment instruments for the health sciences programs.** There are three SLOs for each of the five courses offered in the health sciences program and three program SLOs. According to the 4-year assessment plan one SLO per course per year will be assessed. The assessment will be conducted via lab exercises, quizzes, or exams.

4. **Give priority to lab expenditures, like equipment and technology and consumables, to maximize students' hands-on experience-** at the conclusion of the 2011 spring semester the block grant funding list was prioritized; it included all items listed above.
5. **More library purchases of science books and journal subscriptions-** Support from STEM grant has provided the funds needed to acquire books and journals. A list of items to be selected is circulated among the faculty for ranking the desired titles.

In the last four years we have been able to meet with some limitations the following recommendations for the Health Sciences Program:

1. Increase the number of sections, faculty, and classrooms for the health science courses. These increases are no longer possible as budget restrictions have forced us to reduce our sections every semester.
2. Allot more money to be available for tutoring. Tutoring funds for anatomy and physiology are provided through the learning resource center or the Open Lab hours donated by instructors. These are limited and in addition, it has also been difficult to find qualified tutors.
3. Do the research needed to establish an English prerequisite for targeted courses to increase student success. This goal is gradually being met as we cycle through curriculum review when the course come due for it.
4. Block grant applications for equipment and software. Every year we are allowed to spend a percentage of block grant funds towards upgrading or acquiring new equipment and software. We have not applied to any new block grants.
5. During the summer of 2009 and 2010 the nursing and health faculty have met. This semester Dr. Bui and Mr. Stupy are working on establishing regular meetings with the Nursing department.
6. The hiring of a computer technician to support the increasing shift toward virtual labs (in lieu of a lab technician). Currently, Donna Post works for Math and Science Divisions, but additional assistance is needed, especially to maintain the computer room in LS130. The funding to pay that position has not been identified.

Due to either a lack of funds, district approval, or other limitations, the following recommendations have not been met.

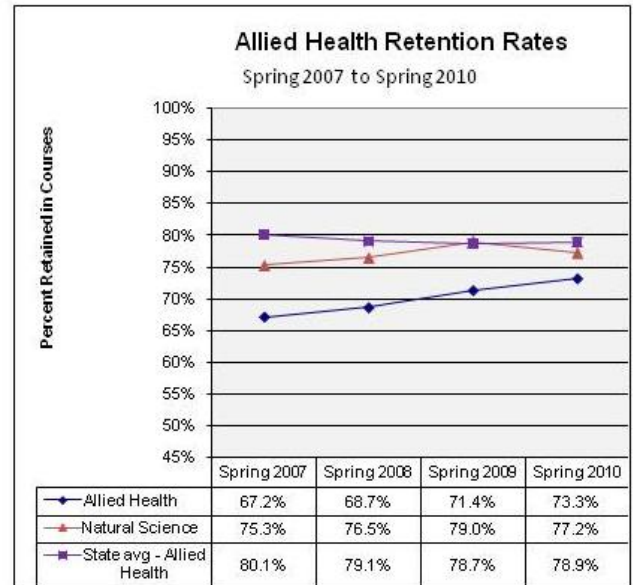
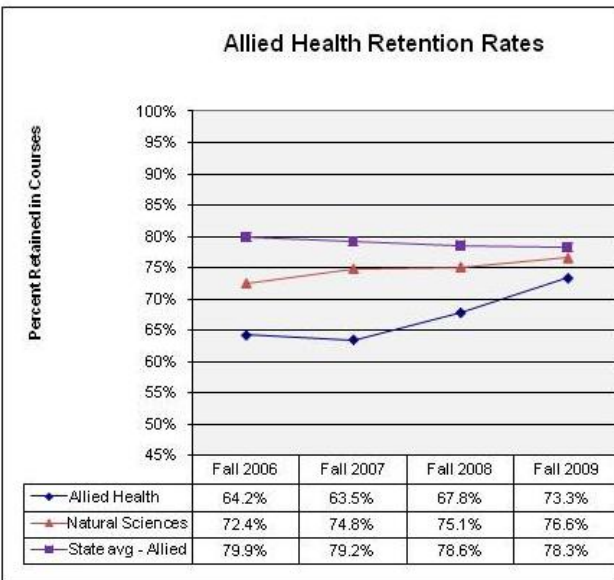
1. Facility improvements, such as better ventilation in the NATS and LS lab rooms. The ventilation systems need to be improved as the temperatures are either too cold or too hot. Facilities has attempted to resolve the issues but only limited and temporary solutions have been found.
2. Hire additional classified staff to be available for new evening and weekend sections. The funding for this is not provided by any type of grant for our division. Grants like the one MESA received pays for additional staffing but it is limited to their program. Therefore, we rely on funding provided by the district and budget restrictions are not making that possible.
3. Computer tutorial open labs and tutorial software. It would be necessary to have staffing available to supervise the computer lab in order to provide open labs where students can access the software. Due to budget restrictions we have chosen to apply the limited funds towards open lab in the classroom where students can access models and microscopes.
4. Equip the labs so that virtual dissections will eventually replace the use of preserved specimens. Providing computers in both anatomy classrooms is not currently possible due to funding restrictions. Acquiring a cadaver has changed our focus to replace preserved specimen dissection in place of virtual dissection. We have been recycling dissected specimens from section to section and reducing the numbers of groups that dissect a new specimen. This has helped address the budget restrictions.

5. Construction of additional laboratory classrooms including converting bottom floor NATS classrooms into laboratory rooms. Renovations for our division have been completed and the only way for acquiring more classrooms to accommodate expansion is after other divisions have completed their renovations. This would allow for reorganization to free up classrooms in buildings near our division.

II. Analysis of Institutional Research Data

a) Course grade distribution; success and retention rates

Course grade distribution: Retention Rates for School Years 2006-2010

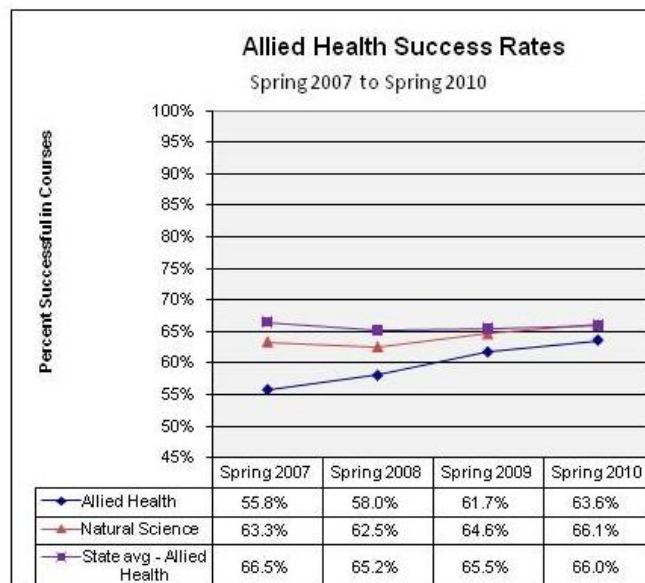
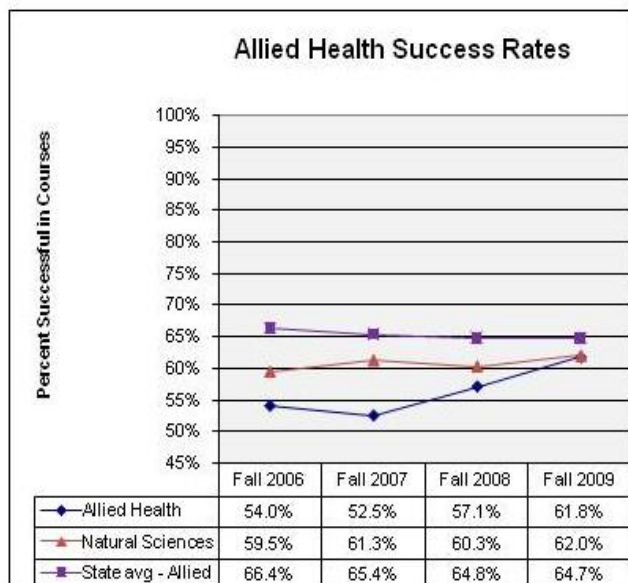


The overall average retention rates (see data charts above) in the Health Science classes encompassing the school years 2006 to 2010 are as follows: Anatomy 30 = 69%, Anatomy 32 = 60%, Microbiology 33 = 79% and Physiology 31 = 77%. Relatively low retention rates in Anatomy 30 and 32 again reflect the fact that many of the students are often under prepared for the rigorous nature of these classes while students in microbiology and physiology reflect a much higher retention rate due to their successful completion of the required prerequisites.

1. Given the data, what trends are observed?

Retention rates in the Health Sciences program as a whole showed a steady increase over the four year period (see data charts above), from retention rates of 64.2% in Fall, 2006 to 73.3% in Spring, 2010. These rates although reflecting a significant increase were still consistently less than the retention rates of the college as a whole. There are several possible reasons starting with the technical and mathematical nature of science courses which make them comparatively more difficult to master. Another reason could be the absence of Credit/No Credit courses in the Health Sciences program and the Natural Science Division, compared to the multitude of such courses in other programs of the college. If retention rates for the college do not include credit/no credit courses, the retention rates for the Health Sciences Program would be more comparable.

Course grade distribution: Success Rates for School Years 2006-2010



The overall average success rates (see chart above) in the Allied Health Science classes encompassing the school years 2006 to 2010 are as follows: Anatomy 30 = 58%, Anatomy 32 = 49%, Microbiology 33 = 73% and Physiology 31 = 73%. Relatively low success rates in Anatomy 30 and 32 reflect the fact that these courses are entry level courses with few, if any pre-requisites. The students are often underprepared for the rigorous nature of the classes. Better student preparation via completion of prerequisites leads to higher success rates as reflected in both the Physiology and Microbiology classes.

1. Given the data, what trends are observed?

Success rates in the Allied Health program as a whole showed a steady increase over the four year school period (see data charts above), from success rates of 54% in Fall, 2006 to 64% in Spring, 2010. These rates although reflecting a significant increase were still consistently less than the success rates of the college as a whole. There are several possible reasons starting with the technical and mathematical nature of science courses which make them comparatively more difficult to master. Another reason could be the absence of Credit/No Credit courses in the Allied Health program and the Natural Science division, compared to the multitude of such courses in other programs of the College. If retention rates for the college do not include credit/no credit courses, the retention rates for the Health Sciences Program would compare better.

b) Enrollment statistics with section and seat counts and fill rates

Enrollment statistics: section and seat counts and fill rates for school years 2006 – 2010

The annual seat count for the Health Sciences program has been rising from 1,972 in 2006-07 to 2,033 in 2009-10, with a 4 year average of 2082.5 (see chart below). The course section fill rates have consistently been over 100%. Despite high fill rates the program is not in growth mode.

	2006-07	2007-08	2008-09	2009-10	4 Yr Average
Annual Seat Count	1972	2082	2243	2033	2082.5

Seat counts for school years 2006 – 2010

The annual fill rate for the Health Sciences courses has been consistently over 100% from 107.4% in the Fall of 2006 to 109.5% in the Fall of 2009. The fill rate of over 100% is an adjustment made by the faculty to minimize student inconvenience. To address high student demand with restricted number of course sections offered instructors allow more students to enroll than the maximum number of seats. This, in turn, is a reflection of the number of students that desire these courses combined with the lack of sections that are offered. However, as a result of the current economic environment the program is not in a growth mode due to the fact that sections have been eliminated from 58 sections offered in 2008-09 to only 52 sections offered for 2009-2010.

2. What adjustments are indicated?

The consistent fill rate of over 100% for the Health Sciences courses, Anatomy, Physiology, and Microbiology, is an adjustment made by the faculty to minimize student inconvenience caused by high student demand versus the restricted number of course sections offered. The high demand for these classes indicates a need for an increase in the number of sections being offered when the facilities and enough funding for more instructors are made available.

c) Scheduling of courses (day vs night, days offered, and sequence):

Instructions: Complete the chart below. Indicate the time when sections of courses in the program are currently scheduled to start. Analyze the data provided by Institutional Research on student satisfaction with scheduling in the program and answer the questions

Course	Early morning before 10	Late am/early pm 10am – 1:55pm	Late afternoon 2 – 4:25pm	Evening 4:30 and later	Summer	Via online
Anat 30	1	1		1	2	1
Anat 32	2	1	1		1	
APhy 34A	1		1	1		
APhy 34B			1	1		
Phys 31	1	1		1	1	
Micro 33	2		1	1	1	

1. What (if anything) is indicated by the student satisfaction with scheduling?

All sections were filled over capacity therefore students seem to be satisfied with the scheduling of classes.

2. Are there time periods of high student demand which are not being addressed?

Yes No

How could such demand be addressed?

Additional sections of Anatomy 30 and 32, Microbiology 33, and Physiology 31 could be offered in the afternoon and early evening.

3. Should a recommendation be written addressing this area? Yes No

(If yes, list.) See Section A recommendations.

- 1) Additional classified staff should be hired to provide support services to the additional sections that need to be added in the afternoon and evenings.

Provide and analyze the additional data compiled by Institutional Research:

At the request of the Life Science faculty several studies were performed by Institutional Research comparing the success rate of several cohorts of students as follows:

Table I	Anat-32 Outcome	
	Did not pass first attempt	Passed First attempt
Did not pass or take Anat-30	1,071 (50%)	1,080 (50%)
Passed Anat-30	16 (19%)	70 (81%)

- 1) Table I above illustrates the outcome of successfully passing Anatomy 32 first attempt. The success rate of students who took the optional Anatomy 30 class prior to undertaking Anatomy 32 was compared to the success rate of students who opted not to take Anatomy 30 or did not pass Anatomy 30 before undertaking Anatomy 32. The table shows little difference in outcomes for students who did not pass or did not take Anat-30 as 50% passed Anatomy 32 on their first attempt. Conversely, more than 80% of the students who passed Anatomy 30 were able to successfully complete Anatomy 32 on their first attempt. The difference in outcome for the two groups was significant ($p < 0.001$) which means there is a very slight chance the differences seen could occur accidentally.

Table II	Phyo-31 Outcome	
	Did not pass first attempt	Passed First attempt
Passed Anat-30	99 (45%)	119 (55%)
Passed Anat-32	134 (24%)	417 (76%)
Passed Anat-30 & 32	2 (8%)	22 (92%)

- 2) The success rate of students who took either Anatomy 30 or Anatomy 32 before taking Physiology 31 was compared to the success rate of students who took both Anatomy 30 and Anatomy 32 before taking Physiology 31. Data results from this study revealed that after the first attempt 92% of the cohort of students that took both Anatomy 30 and Anatomy 32 passed (grade of C or better) versus only 76% of those students who opted not to take Anatomy 30. For the cohort of students who opted to take only Anatomy 30 before attempting Physiology 31 the success rate dropped to 55%. Table II below illustrates the outcome of the Physiology 31 first attempt. It is noted that the cohort of students taking both courses was small and therefore these results would need to be duplicated before significance can be established.

Table III	Aphy-34A Outcome	
	Did not pass first attempt	Passed First attempt
Took Chem after Aphy-34A	1 (20%)	4 (80%)
No Chem on record	64 (52%)	59 (48%)
Concurrent Chem	4 (80%)	1 (20%)
Chem before Aphy-34A	26 (46%)	30 (54%)

- 3) The success rate of students who took a chemistry course at El Camino prior to attempting Physiology 34A was compared to the success rate of students who took chemistry concurrent with taking Physiology 34A. Data results from this study revealed that after the first attempt 54% of the cohort of students that took chemistry prior to Physiology 34A passed compared to only 20% of those students who took a concurrent chemistry course with Physiology 34A. For the cohort of students who took chemistry at another college before taking Physiology 34A 48% passed Physiology 34A after their first attempt. For the cohort of students that took chemistry after attempting Physiology 34A the success rate was 80% but the study only included 5 students therefore no significance could be established. Table III above illustrates the outcome of the Physiology 31 first attempt.

d) List related recommendations (when applicable)

It is highly recommended that the pre-requisite requirements be re-assessed. Physiology 31 should require Anatomy 32 as a pre-requisite and Anatomy 32 should require Anatomy 30 as a pre-requisite. Also, students should not be allowed to take chemistry concurrently with Anatomy 34A. There is room to expand on the number of sections offered in Microbiology and Anatomy 34B.

III. Curriculum

a) Provide the curriculum course review timeline to ensure all courses are reviewed at least once every 6 years.

This semester (Spring 2011) the Health Sciences Program consists of 6 courses with a total of 23 sections. Anatomy 30 (5 sections), Anatomy 32 (6 sections Anatomy & Physiology 34A and 34B (2 sections each), Physiology 31 (4 sections), and Microbiology 33 (4 sections).

Concerning the scheduling of Course Review:

Course	Last Review	Next Review
Anatomy 30	2004	Fall 2010, Spring 2011, Spring 2010
Anatomy 32	2009	Fall 2015
Anatomy 34 A&B	2009	Fall 2012
Physiology 31	2010	Fall 2013
Microbiology	2009	Fall 2014

b) Explain any course additions to current course offerings

Since the last reviews of the separate Anatomy and Physiology courses: 2 new courses have been added: Combined Anatomy and Physiology 34A and 34B. These courses are each 4 units and combine Anatomy with Physiology in a one year sequence which is compatible with the individual Anatomy and individual Physiology courses. Additionally, a section of an Online Hybrid course of Anatomy 30 has been added to the Anatomy sections. Also, the Department obtained a human cadaver, and dissection has begun.

c) Explain any course deletions from current course offerings

As of 2011, no course deletions have been made. For each semester, every section of the 23 Health Sciences Courses has been full and large numbers of students have been turned away in many cases

d) Have all courses that are required for your program's degrees and certificates been offered during the last two years? If not, has the program established a course offering cycle?

All of the courses required for Degrees and Certificates have been offered each semester for the last 2 years and they will continue to be offered each semester in the future semesters.

e) Discuss any concerns regarding department/program's courses and their articulation

Concerning Articulation, there have been no problems with any of the course offerings. In fact, per anecdotal information, students transferring to professional schools have been successful. Pre-Nursing students have also transferred to many different programs across the U.S. and have not encountered any problems with course preparation.

f) Discuss the degrees, certificates, and licensure exams (when applicable). If few students receive degrees or certificates or if few students pass the licensure exam, should the program's criteria or courses be re-examined?

Currently, there are no individual degrees or certificates offered for just the Health Science Program specifically, but the program personnel are planning to offer and award "Pre-Health" A.S. Degree in the near future.

g) List related recommendations (when applicable)

The Department is considering and recommending 2 possible new courses in the near future. However, a proposed time line is not in place. This will be created when the budget situation improves and funding becomes available to pay for faculty to teach the courses and also to compensate instructors for dissecting the cadaver.

a) A 1-unit Laboratory Course for Anatomy and Physiology to better increase basic skills while studying Anatomy for students enrolled in the formal Anatomy and Physiology Courses.

b) A 1 or 2 Unit Course of Human Cadaver Anatomy observation and demonstration. These courses will enhance and vastly improve the students' motivation and interest to have greater success and efficiency in the formal Anatomy and Physiology course offerings.

IV. Student Learning Outcomes (SLOs)

Program faculty has collaborated to complete program and course level student learning outcomes.

The first course assessment was completed in 2009-2010 in collaboration with the biological science program courses. The results of this assessment revealed needed modifications in methods for assessing program and course SLOs. These modifications to the assessment methods led to the decision to separate the health science courses from the biological science courses and thus form two separate programs under one department.

The second SLO assessment was done at the program and course level. In general, the results revealed that students in courses that have a pre-requisite performed better on conceptual questions that required higher level thinking skills.

a) Program and Course Level SLOs

A. Anatomy 30

1. Students will be able to use language appropriate to anatomy and physiology and the health sciences.
2. Students will be able to identify higher vertebrate body structures, and explain functions of all body systems
3. Students will demonstrate the use of instruments for dissection, histology, and to gather data, then analyze the data.

B. Anatomy 32

1. Students will be able to use language appropriate to anatomy and the health sciences.
2. Students will be able to identify higher vertebrate body structures of all body systems.
3. Students will demonstrate the use of instruments for dissection, histology, and to gather data.

C. Anatomy & Physiology 34A

1. Students will be able to use language appropriate to anatomy and physiology, and the health sciences.
2. Students will be able to identify structures of the integumentary, skeletal, muscular, and nervous systems, in addition to explaining the functions of the systems.
3. Students will demonstrate the use of instruments for dissection, histology, and to gather data, then analyze the data.

D. Anatomy & Physiology 34B

1. Students will be able to use language appropriate to anatomy and physiology, and the health sciences.
2. Students will be able to identify structures of the nervous, endocrine, circulatory, respiratory, digestive, urinary, and reproductive systems, in addition to explaining the functions of the systems.
3. Students will demonstrate the use of instruments for dissection, histology, and to gather data, then analyze the data.

E. Physiology 31

1. Students will be able to use language appropriate to physiological functions and the health sciences.
2. Students will be able to describe mechanisms and explain physiological processes that occur in the human body on cellular, organ, systemic, and organismal levels.
3. Students will demonstrate the use of instruments to gather physiological data, then analyze the data.

F. Microbiology

1. Students will be able to use language appropriate to microbiological studies and the health sciences.
2. Students will demonstrate the use of instruments to gather microbiological data, then analyze the data.
3. Student will be able to identify microbes and explain their roles in health and disease

G. Health Program SLO

1. Students will be able to use language appropriate to the health sciences.
2. Students will demonstrate the use of instruments to gather data, then analyze the data.
3. Students will be able to apply concepts learned to healthy and pathological outcomes.

b) Provide a timeline for the four-year cycle for course and program level SLO assessments

Directions: Starting in academic year 2011-2012, SLOs will be assessed over a four-year cycle at ECC. Because program review will start occurring in calendar years (i.e. Spring to Fall semester), the grid below is organized by calendar year rather than academic year. Plan out your program's assessments so that all SLOs (both course- and program-level) are assessed at least once every four years.

Calendar Year	Semester	Course-Level SLOs Assessed	Program-Level SLOs Assessed
Year 1 of 4-Year SLO Cycle (3 years before Program Review)	Spring Year 1	Health science language SLO (All sections) 2012	Health science language SLO (All sections) 2012
	Fall Year 1		
	Spring Year 2	Use of Scientific Instruments SLO (All sections) 2013	Use of Scientific Instruments SLO (All sections) 2013
Year 2 of 4-Year SLO Cycle (2 years before Program Review)	Fall Year 2		
	Spring Year 3	Anatomical structures and physiology explanations SLO (All sections) 2014	Anatomical structures and physiology explanations SLO (All sections) 2014
Year 3 of 4-Year SLO Cycle (1 year before Program Review)	Fall Year 3		
	Spring Year 4	Program Review, 2015	
Year 4 of 4-Year SLO Cycle (Year of Program Review)	Fall Year 4		
	Spring Year 4		

***Note: Indicate which SLOs will be assessed in the timeline by indicating the number or title of the SLO.**

c) Describe the assessment results and explain the recommended/implemented changes resulting from course and program level SLO assessment. Analyze the changes that were implemented.

Assessment Results:

1. Use of scientific instruments was assessed in spring 2010 by all Health Science sections by having students demonstrate their abilities to view and identify objects with compound microscopes.
2. Students were assessed via a rubric that rated their abilities to use the microscope on a scale of 1-4, with 1 being an inability to use the microscope, to 4 which indicated proficient microscope use.
3. Analysis of the data revealed that the majority of students in all health sciences classes scored level 4 in microscope proficiency. Microbiology had less students that scored level 4, mainly because they also have to use the oil immersion lens, which is more difficult to master.

Recommended/implemented changes:

1. The results of this assessment revealed that many of the microscopes are in poor condition, and several different types of microscopes are used in each room. These two factors affect student performance, as it is difficult to teach proper microscope use when students are consistently exposed to different microscope models
2. It is recommended that microscopes be purchased to replace those in poor condition. Also, purchasing new microscopes and rearranging current microscopes can help create more consistency in microscope design. This will facilitate proper instruction of microscope use.

Analysis of implemented changes:

1. Since this was the first SLO assessed we do not have any results to compare after the implemented changes.

D) Based on the Accrediting Commission for Community and Junior Colleges' (ACCJC) Rubric for Student Learning Outcomes, determine and discuss the program's level of SLO/assessment implementation: Awareness; Development; Proficiency; or Sustainable Continuous Quality Improvement?**Awareness:**

Health Science Program faculty members continue to discuss methods of assessing and implementing student learning outcomes.

Development:

1. Health Sciences Program faculty members have established a time line for the implementation of student learning outcomes.
2. The appointment of a Natural Sciences Division SLO coordinator has been helpful in developing SLOs and establishing the time line for their implementation.

Proficiency:

The Health Sciences Program is currently at the Proficiency level of implementation of SLOs. We have established Program-level SLOs that reflect the core ideas of the program, and each course has determined specific SLOs that support and reinforce student learning of the core ideas. All the program and course level SLOs work to support the Core Competencies of El Camino College. We have collectively assessed, first at the course level and now at the program level established SLOs. Each time assessments have been done, we find ways to improve the assessment to more authentically obtain the information we need about our students' level of success with these important Health Sciences concepts and skills. In doing the assessments, we get better at developing assessment tools that will give us the information that we need to inform our instructional practice and improve our student success. The Health Sciences faculty has organized responsibility for implementation of SLOs. There is a variety of Allied Health courses, and this has challenged us to determine core ideas that are consistent across the different fields of Health Sciences. Now that a review cycle has been established, we will be able to regularly assess our students' level of success and determine if the changes we make to instruction, curriculum, or resource use will have the intended effect on student achievement. Faculty members are now clear about their own individual role in the implementation of SLOs for each course and the program through course syllabi, and the division web sites, and the college catalogue.

Sustainable Continuous Quality Improvement

Time is needed to allow to the Sustainable Continuous Quality Improvement level of implementation, since the structure is in place to allow the Health Sciences Program to do this.

e) List related recommendations (when applicable)

No further recommendations.

V. Facilities, Equipment, and Technology

a) Describe and assess the adequacy and currency of the facilities, equipment, and technology used by the program/department

The program makes very effective use of its facilities and equipment. Despite this, and the constant class cuts, as mandated from above, it is not a matter of the effective use of the facilities but its actual the under use. This ultimately results in our inability to meet the student demand. Prior to these cuts every available laboratory room was scheduled continuously throughout the day. The high demand for these courses

required that equipment be shared in most cases in order to serve the number of sections of the course using it. Sadly, the result of such overuse led to rapid equipment degradation.

The quality of the program is most impacted by the failure of adequate funds to replace the degraded equipment as well as consumables. This massive loss of adequate equipment means that the classes are even less effective and thereby makes the college even less able to serve its mandate as an institution of higher education. Currently, the savage cuts in sections results in as many as 90 students trying to enroll into each of the remaining classes. Consequently, the class sizes must be maintained at a number that restricts student access to instructor help.

One bright spot is the introduction of the two semester AP34 classes. The presentation of the anatomy and physiology concepts together and over the prolonged time period of the two semesters appears to be resulting in a notable improvement in levels of student understanding and success. This situation, however, further impacts our degraded equipment stores. The AP34 classes utilize both anatomy and physiology equipment which is located in separated rooms and buildings. These two courses are natural extensions of each other and should have been placed in the same building. Now, we are forced to move equipment back and forth between the two buildings causing even further equipment damage. The necessary solution is to provide labs in both buildings with a complete class set of anatomy and physiology equipment.

b) Explain the immediate (1-2 years) needs related to facilities, equipment, & technology

The heavy, but necessary, usage of the equipment inevitably leads to irreparable damage that cannot be maintained adequately despite the combined efforts of faculty, technicians, janitors, and maintenance personnel to adequately maintain the facilities. Despite our best efforts to nurse the equipment along, it is no longer sustainable and needs to be replaced within the next one to two years. Examples of such are models that are broken or missing many pieces, broken chair or table legs/wheels, exhaust hoods, microscope components, cabinet locks, Bunsen burners, and other microbiology equipment.

Similarly, the current computers used in the physiology classes are so old that they are failing on a weekly basis. This is further complicated by the BioPac equipment, which are equally outdated, resulting in false test results if, and when, the equipment actually works. The computers, the BioPacs and their supporting software need to be updated within the next two years.

c) Explain the long-range (2-4 years) needs in these areas

One would hope that common sense will one day return and the additional classes necessary to meet the students needs will be re-instated. With that in consideration, it is clearly necessary to obtain additional equipment, program software, models and slides, as well as an additional cadaver to meet the increased demand and usage. It was the over-usage, together with limited replacement, that has lead to the dilapidated state that our equipment is currently in. Ergo, over the next two to four years, the replacements and updates will have to continue.

d) List related recommendations (when applicable)

The age and loss of functioning equipment has reached the crisis point and requires immediate replacement. This needs to be combined with an update of current technology and its supporting materials. Eventually, additional fully laboratory classrooms will be updated to meet the demand for life science courses, and to reach the optimum student/teacher ratio this will improve the quality of the program.

Therefore: Within the next 1-2 years

- 1) Broken models, microscopes, and slides need to be replaced , this will be
- 2) Computers need to be updated at an at an approximate cost of \$15,000 or \$25,00
- 3) BioPac equipment and programs need to be updated. There is an approximate cost of \$50,000 to purchase the software, data acquisition units and laptops.

Within the next 3-4 years

- 1) Additional models, equipment, and slides need to be added to the inventory. This will permit and accommodate the growth of additional classes. It will also permit the physiology and the anatomy classes to be equipped for both the combined courses (AP34) and the independent courses Ant 30/32, and Physio 31).
- 2) New computer simulations and computer labs (e.g. Iworks) need to be acquired.
- 3) The addition of a second cadaver will also better accommodate the student needs.
- 4) Replace first cadaver. They only have 3-4 year span.

VI. Staffing

a) Describe current staffing (include all employees)

In the fall 2008 semester, the FTEF was 10.731 which was slightly higher than the fall 2009 semester 9.365. Most recently, the FTEF for fall 2010 semester was 7.699. The decrease of FTEF was do to the reduction of class sections offered. The full-time faculty to part-time faculty load ratios(FT/PT load ratios) for fall 2008 was 2.67:1, fall 2009 was 3.2:1 and for fall 2010 was 8.5:1.

The data for the FTEF indicates that with each additional year, fewer sections were being offered to students. The FT/PT load ratios were low for both the fall 2008 (2.67:1) and fall 2009 (3.2:1), because of the unexpected death of Leigh St. John and a two year leave of absence by Jessica Padilla. The FT/PT ratio for fall 2010 was much higher (8.5:1), due to the hiring of another full-time anatomy-physiology instructor, Ann Valle, and the return of Jessica Padilla.

Name	Reassigned time (how much in %)	Currently on leave	Retired in last 2 years	FT hired last 3 years	Anticipated retire next 3 year
Thuy Bui	_____	_____	_____	_____	_____
Jessica Padilla	_____	_____	_____	_____	_____
Lester Scharlin	_____	_____	_____	_____	X_____
Margaret Steinberg	_____	_____	_____	_____	_____
Michael Stupy	_____	_____	_____	_____	_____
Simon Trench	_____	_____	_____	_____	_____
Ann Valle	_____	_____	_____	X_____	_____

b) Explain and justify the program/department’s immediate and long-range staffing needs

The faculty status data shown in the above table indicates that the loss of the full-time faculty position occupied by Leigh St. John, has been filled with a new full-time faculty member, Ann Valle. The data does not reflect the possibility that within five years there may be at least two additional full-time faculty retirements. The program could again experience a low FT/PT ratio. The data indicates that Lester Scharlin, who teaches microbiology, will probably retire within the next three years. In the future, the hiring of a new full-time faculty member may be required to replace his full-time position to help maintain a high FT/PT ratio.

c) List related recommendations (when applicable)- Replace any retirements occurring in the next 5 years.

VII. Direction and Vision

a) Are there any changes within the academic field/industry that will impact the program in the next four years?

The health science faculty is well aware of the state of the department in terms of budget constraints. Every semester faculty turn away students wanting to take courses in Anatomy, Physiology, and Microbiology because there are not enough sections offered. This is due to insufficient funding to pay for the instructors to teach them. The faculty and technicians are constantly faced with updating their courses and the costs associated with purchasing the needed supplies. Budget concerns are presented to the faculty in order to better utilize the existing materials. Division council and departmental meetings meet regularly to show a clear state of the department.

In terms of technology, there are always new and better animations and programs. An example is Real Anatomy that brings the materials closer to resembling the human body. The students may then take home the materials with them. Currently, an attempt is being pursued to bring Real Anatomy as part of the textbook requirements for Anatomy 32 students. In addition, the impact of the budget will not allow the development of new courses such as Pathophysiology and Forensic Pathology to be offered to students beyond the Anatomy, Physiology, and Microbiology currently offered.

b) Explain the direction and vision of the program and how you plan to achieve it.

The vision of the program is to prepare students academically for their fields of choice such as Nursing, X-ray Technology, Respiratory Technology, and others. Currently, rigorous courses are taught that emphasize mechanisms and structures of the human body and how microorganisms and diseases may affect it. With the inclusion of the cadaver in future courses, the structures and features studied in textbooks would be shown in a real, embalmed human body.

In order to achieve this, additional recommended courses, such as English and Biology should be taken before taking Anatomy. This emphasis would ensure that students are better prepared when entering the Health Science courses. This will facilitate to a higher retention rate and success rate for the program. In the future when the economy is more stable, hiring more faculty would better prepare future students by providing a more uniform quality for the courses of Anatomy, Physiology, and Microbiology.

c) How does the program fulfill the college's mission and align with the strategic initiatives?

The mission of the program is to ensure that students in the Health Sciences Program will have obtained sufficient knowledge to succeed in any health related field of their choice. This is in response to the increase demand of more health care personnel. In the classrooms, different technologies and animations are used beyond the PowerPoint presentations and handouts that will enhance the learning experience for students and better prepare them for their future endeavors. In addition, the applications and work experience of well educated and well informed body of the health science faculty has provided students an excellent education and support services. This includes obtaining analytical and problem solving skills involved in case studies and reading materials.

In compliance to the strategic initiatives, through students learning outcomes, the faculty have come together to agree that certain fundamental knowledge should be achieved and obtained by all students taking Anatomy, Physiology, and Microbiology. This continues to strengthen the students' capabilities and increases their chances of success in future endeavors.

VII. Prioritized Recommendations

a) Provide a single, prioritized list of recommendations and needs for your program/department, including *cost estimates* for salaries, expenditures and/or purchasing needs.

	Recommendation	Estimated Expense
1.	Reinstate the number of sections and further increase the number of sections, faculty, and classrooms for the health science courses. Every semester our program at the ECC campus loses sections while the number of students demanding the courses rises and the Compton Campus gets more sections. The quality of our program separates us from nearby colleges and there are always 20-30 students per section that are turned away at the beginning of the semester. It is difficult to provide an estimate cost to the loss of our courses as it includes salaries, supplies, and reviews from student enrollment. The estimated expense is per section and it includes faculty salary and materials.	\$10,000 per section
2.	Allow for modification of pre-designated purchases by block grant. It has been over five years since items and quantities for block grant purchases were selected. There have been many changes in our needs since then, yet we are forced to abide by those designations with no flexibility. If we are to maximize the funds and meet our current needs we need flexibility.	Funding varies per year & prioritization
3.	It is highly recommended that the pre-requisite requirements be re-assessed. Physiology 31 should require Anatomy 32 as a pre-requisite or not accept Anatomy 30 as a pre-requisite and Anatomy 32 should require Anatomy 30 as a pre-requisite. Also, students should not be allowed to take chemistry concurrently with Anatomy 34A. In addition, research is needed to properly establish an English pre-requisite.	\$0.0
4.	Purchase enough microscopes to be able to standardized the types of microscopes being used and increase student's proficient use of a microscope. Approximate cost depends on how many need to be purchased and for yearly maintenance.	\$50,000 to \$80,000
5.	Provide faculty compensation for cadaver dissection as it requires advance skills. Currently we only have one cadaver to be used for several years by many sections per semester. Thus, faculty will dissect the cadaver to maintain it's integrity. This would be at the special assignment compensation of \$60.00/hour for an approximate total cost as it takes about 200 hours to properly dissect a cadaver which can be kept for 5-6 years.	\$12,000 for 1-2 years per cadaver dissected
6.	Provide additional funds to purchase more cadavers. Other community colleges that have a cadaver program have multiple cadavers. Currently, we only have one female and acquiring a male is important. The use of both male and female cadavers will enhance the education we can provide students.	\$5,000 per body

	Recommendation	Estimated Expense
7.	Facility improvements, such as better ventilation in the NATS and LS lab rooms. When dissections are performed, especially now that we have a cadaver preserved in formaldehyde (a known carcinogen), proper ventilation is essential. Providing an estimate cost is difficult as this includes costs that must be calculated by facility.	\$36,000- \$50,00 for hood equipment
8.	Allot more money to be available for tutoring. We need tutors for evening and day students. Student pay ranges from \$8.50 – \$10.50 depending on preparation.	\$2,500- \$3,000/yr
9.	Hire additional classified staff to be available for new evening and weekend sections. Cost depends on experience and number of hours employee works.	\$20,000 - \$35,000/yr
10.	Computer tutorial open labs and tutorial software. Approximately \$10,000 for software and \$25,000 for computers.	\$10,00- 35,000/ yr
11.	Schedule regular meetings with the Nursing and Allied Health faculty.	\$0.0
12.	Offer a 1-unit Laboratory Course for Anatomy and Physiology to better increase basic skills while studying Anatomy for students enrolled in the formal Anatomy and Physiology Courses.	\$6,000/yr
13.	Offer a 1 or 2 Unit Course of Human Cadaver Anatomy observation and demonstration. These courses will enhance and vastly improve the students' motivation and interest to have greater success and efficiency in the formal Anatomy and Physiology course offerings.	\$ 6,000- \$10,000/yr
14.	Equip the labs so that virtual lab activities can help supplement specimen dissection and to offset expense restrictions resulting from budget cuts. Fees include software costs, consumables, and computer maintenance.	\$10,000- \$15,000/yr
15.	The hiring of a computer technician to support the services provided by Donna Posts. If there is more demand of the computer laboratory Donna Post will require assistance.	\$35,000- \$40,000/yr
16.	Construction of additional laboratory classrooms including converting bottom floor NATS classrooms into laboratory rooms. Now that we are offering Anatomy 34A and B, additional lab space would reduce the room changes every week. Since the bottom floor of the NATS building is now scheduled to become the new MESA Center and the home to a new STEM Center we need to find an alternate location to meet our need for additional classrooms.	