PLO Assessment Report - Four Column Report
El Camino College - NATURAL SCIENCES DIVISION
El Camino: PLOs (NSC) - Life Science: Allied Health (Anatomy, Physiology, Microbiology)

PLOs	Assessment Methods & Standard and Rubric / Tasks	Results	Action & Follow-Up
El Camino: PLOs (NSC) - Life Science: Allied Health (Anatomy, Physiology, Microbiology) - PLO #3 Application of Health Science Concepts - Students will be able to apply concepts learned to healthy and pathological outcomes. **PLO Assessment Cycle:** 2013-14 (Spring 2014) **Input Date:** 11/12/2013 **PLO Status:** Active	**Assessment Method Description:** Multiple choice questions were incorporated into exams or quizzes to assess student understanding of cellular structure and function. **Assessment Method:** Exam/Test/Quiz **Standard and Rubric:** The rubric for the Cell Structure and Function PLO Assessment was: Level 1 Student can answer one question about cell structure and transport. Level 2 Student can answer two questions about cell structure and transport. Level 3 Student can answer all three questions about cell structure and transport.	09/08/2014 - The questions used to assess student understanding included the following: 1. Red blood cells are observed under a microscope, then a 20% saline solution is added to them. Which of the following would you expect to see? A) The cells would swell up and lyse B) The cells would crenate C) The cells would look the same as before the saline solution was added D) The cells would turn inside out E) The cells would dance the Macarena 2. In Tay-Sachs disease, glycolipids build up in nerve cells and cause neuronal death because the organelle that normally degrades the glycolipids is nonfunctional. Which one of the following 5 organelles is responsible for this disease? A) Mitochondrion B) Smooth Endoplasmic Reticulum C) Peroxisomes D) Lysosomes E) Golgi Apparatus 3. The phospholipids of a cellular membrane will have their ____ends facing each other and their _____ ends facing either the intracellular or extracellular space. A) hypotonic; hypertonic B) hypertonic; hypotonic C) hydrophilic; hydrophobic D) hydrophobic; hydrophilic E) hypotonic; hydrophobic Overall, the average percent of students in the Health Sciences Program who answered two or more questions correctly was about 65%, which did barely met the rubric target of 65% of the students. Some courses within the Program met or exceeded the target, whereas other courses fell short of the target. Courses that met or exceeded the target included Anatomy 32, with 89.7% of students meeting the target, Physiology 31, with 71.1% of students who met the target, and Microbiology 33, with 72.5% of students on target. Courses that did not meet the target included Anatomy 30, with 42.9% of student who met the target, followed	09/08/2018 - Review assessment topics with students just prior to examinations. To be assessed during the next assessment cycle for the “Application of Health Science Concepts” for the PLO. **Action Category:** Teaching Strategies 09/08/2015 - We will request that the College provide more qualified tutors to help students understand the topics. **Action Category:** Program/College Support 11/02/2014 - Changes will be made to the Rubric, and to the assessment questions and/or answers. In regard to the Rubric, we will add the choices: “Student answered 0 questions correctly about cell structure and transport.” Changes to assessment question answers will include: For question 1, letter B, we will add the word “shrink” in parentheses after crenate. For question 2, we are going to change the letter C answer from “peroxisomes” to “ribosomes.” **Action Category:** SLO/PLO Assessment Process

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		by Anatomy & Physiology 34B, with 45.7% of students on target, and Anatomy and Physiology 34A, with 62.3% of students meeting the target. One reason that Anatomy 30 had the lowest percentage of students who met the target may be due to the fact that Anatomy 30 is an entry level course that has no prerequisites to enter the course, and thus receives students who are not adequately prepared for the amount of study required to succeed in such a rigorous course. However, Anatomy 32, which is a higher level entry course than Anatomy 30, had the greatest percentage of students who achieved the target level. An examination of the methods whereby the questions' topics are taught in Anatomy 32 compared to those used in Anatomy 30 could help to improve the scores in Anatomy 30. Anatomy & Physiology 34A, which is another entry level course, does have a Chemistry prerequisite, which is also a rigorous science course, which could be one reason that the students in the course were closer to meeting the target level of 65%. The question topics are part of the curriculum material in the Anatomy & Physiology 34A course, but are peripherally related to Anatomy & Physiology 34B course material. The fact that some students do not take the 34B course immediately after taking the 34A course might could be a reason that students fell below the target level in the 34B course. The data indicates that some of the 34B students do not seem to be able to recall and apply the information they learned in 34A to the 34B subject matter. The students in Physiology 31 exceeded the target level, which is possibly because Anatomy 32 is a prerequisite to Physiology 31, and the information is repeated in Physiology 31. Microbiology students also exceeded the target level, which could be partly due to the fact that the students in the course have already been exposed to the subject matter in the prerequisite courses of Anatomy 32 or Anatomy & Physiology 34A. On another note, our Rubric needs to be revised by adding a level 0 for students who can't answer any of the questions correctly, because unfortunately that was the case for some students. In relation to individual answers to the questions posed, the target of 65% correct answers was not met for most of the courses. Exceptions include Anatomy 32, with 66.7%-79.5% of students who answered all three questions correctly, and Microbiology 33, with 75% of students who answered question #2 correctly. Although the target of 65% was not met in most of the courses, the majority of students in most courses did answer the individual questions correctly. In all of the courses an unusually large percentage of students (ranging from 23.1-42.9%) chose answer A, that cells would swell up	

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		and lyse in a 20% saline solution, for question #1, rather than the correct answer B (percent range from 44.9-66.7%), that cells would crenate. Likewise, for question #2 about the organelle responsible for Tay-Sach's disease, a somewhat large percentage of students (7.5-32.7%) chose answer C, peroxisomes, rather than the correct answer D (percent range from 42.9-75%), which was lysosomes. Similarly, for question #3 about how phospholipids are arranged in a plasma membrane, a relatively large percentage of students (12.8-37.5%) chose answer C, hydrophilic; hydrophobic, rather than the correct answer D (percent range from 51-79.5%), which was hydrophobic; hydrophilic. This fairly large percent of students choosing the same incorrect answer could indicate some confusion with the wording of the questions and/or that of the answers, or uncertainty about which answer is correct. Our faculty discussed these questions and their answers, and decided to reword the answers to questions 1 and 2. For question 1, letter B, we will add the word "shrink" in parentheses after crenate, because some of our courses don't use the word crenate. For question 2, we are going to change the letter C answer from "peroxisomes" to "ribosomes." Because both peroxisomes and lysosomes are degradative organelles, this change should minimize confusion about the correct answer. For question 3, no change was deemed necessary. Students who chose the answer that was the exact opposite to the one that was correct, clearly didn't understand the relationship between the nonpolar, hydrophobic fatty acids and polar, hydrophilic phosphates and how they interact in a cell's plasma membrane. Our faculty also shared techniques about how these topics are taught to determine more effective ways of helping students to learn and retain the material. One instructor, whose classes had a relatively high percentage of correct answers, said that she reviewed the question concepts with her students the day before she quizzed them on the information. Although most, if not all, of our faculty provide study guides to their students prior to exams, apparently an in-class review is helpful. **Standard Met:** No **Semester of Current Assessment:** 2013-14 (Spring 2014) **Faculty Assessment Leader:** M. Steinberg and T. Noyes **Faculty Contributing to Assessment:** T. Bui, J. Padilla, M. Stupy, S. Trench, A. Valle, T. White	

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		Courses Associated with PLO Assessment: Anatomy 30, Anatomy 32, Anatomy & Physiology 34A, Anatomy & Physiology 34B, Physiology 31, and Microbiology 33 **Related Documents:** ProgramCellSLOData.xls	