Assessment: Course Four Column

SPRING / SUMMER 2016

El Camino: Course SLOs (NSC) - Biology

ECC: BIOL 10:Fundamentals of Biology

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #1 Scientific Method - The student will understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2013-14 (Spring 2014) **Input Date:** 11/08/2013	**Exam/Test/Quiz -** Students read a research summary article "Owls Use Tools" and answer questions about the scientific process used in the study. See attached article and assessment. **Standard and Target for Success:** 75% of the students will achieve a 70% or higher on the analysis question quiz after reading the article.		
SLO #2 Tools - The student will be able to use the compound and dissecting microscope to observe cells and microorganisms. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2015-16 (Spring 2016) **Input Date:** 11/08/2013	**Performance -** see attached assessment and rubric **Related Documents:** Biology SLO Proficiency with the Microscope 2016.doc	**Semester and Year Assessment Conducted:** 2015-16 (Spring 2016) **Standard Met? :** Standard Met A total of 250 Bio 10 students were assessed across 8 class sections. 151 scored level 4 45 scored level 3 25 scored level 2 28 scored level 1 Seventy eight percent of the students were able to prepare a wet mount specimen, focus it using low power and then adjust it to high power effectively. Level 4 required that they make a final adjustment with the lighting in order to get the highest level of resolution and contrast. Level 3 is	**Action:** A Brown Bag session will be dedicated to discussing and summarizing "Best Practices" for teaching students how to use the microscope and strategies for holding each student accountable for learning this important skill in biology. (12/09/2016) **Action Category:** Teaching Strategies **Action:** Incorporate the effective strategies gathered from instructors into the instruction introducing

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		considered competent and fully functional use of the microscope for viewing and the standard was met at level 3. The 53 students who were scored at level one or two were able to prepare the slide and possibly use the course focus to view the specimen but were not able to adjust the microscope for high power. This is a skill that takes practice. During the semester, students who are less confident with the use of the microscope may rely on other lab partners to operate the microscope. Instructors can ensure that all students are improving microscope skills by assigning each member of the group a specimen to locate and share with the group. This will hold each student accountable for their own personal use of the microscope and contribution to the lab group. Instructors who take time to teach "How to Use the Microscope" in the beginning of the semester felt that the time is well spent and most students pick up the sequence and skill quickly. While we each teach this skill in a unique way, some effective strategies were shared during the discussion. Students have particular difficulty focusing on specimens in high power. One instructor helps his students find the right focal plane for high power by instructing them to focus on the edge of the cover slip first and then move the slide to find the specimen. These instructional tips will be summarized and included in the Bio 10 Instructors Guide so that all Bio 10 Instructors, including newly hired faculty, can consider any of these techniques and include them in their own instructions. (05/12/2016) **Faculty Assessment Leader:** Nancy Freeman **Faculty Contributing to Assessment:** N. Freeman, S. Leonelli, A. Wellday, C. Lew, and A. Qian	students to the microscope during the fall and determine students response. (09/06/2016) **Action Category:** Teaching Strategies
SLO #3 Content Knowledge (Mitosis) **-** The student will be able to describe key activities in cell replication. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2016-17 (Spring 2017)			

Course SLOs	*Assessment Method Description*	*Results*	*Actions*

Input Date: 11/08/2013

ECC: BIOL 101:Principles of Biology I

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #1 Scientific Method - The student will understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2013-14 (Spring 2014) **Input Date:** 11/08/2013	**Exam/Test/Quiz -** The student is given an article to read and 6 questions to answer from the article. **Standard and Target for Success:** 70% of students will score at least a 4 correct out of 6 total questions.		
SLO #2 Use of Microscope - The student will be able to use the compound and dissecting microscope to observe cells and microorganisms. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2015-16 (Spring 2016) **Input Date:** 11/08/2013	**Performance -** See attached assessment and rubric. **Standard and Target for Success:** 75% of students will show competency with use of the microscope by scoring 3 or higher on the rubric. **Related Documents:** Biology SLO Proficiency with the Microscope 2016.doc	**Semester and Year Assessment Conducted:** 2015-16 (Spring 2016) **Standard Met? :** Standard Met A total of 87 students were assessed across 3 sections of Bio 101. 68 scored level 4 12 scored level 3 7 scored level 2 0 scored level 1 92% of the majors Bio students showed proficiency with use of the microscope, demonstrating competency with the ability to locate and focus on a specimen in low and high power and most were able to make the fine adjustments with the lighting to get the best resolution and image. Majors Bio students typically have more experience with the microscope and become highly skilled users over the semester with consistent use of this tool in lab. (09/06/2016) **Faculty Assessment Leader:** Karla Villatoro **Faculty Contributing to Assessment:** Bryan Carey	**Action:** During the introduction to the microscope use, we will provide students with the instructions from microscope manufacturer on how to focus. These instructions clearly state that students should focus on low power before moving to high power. These instructions also include the use of the diaphragm lever to increase contrast. (09/08/2016) **Action Category:** Teaching Strategies
SLO #3 Content Knowledge (Energy Flow) - Students will use basic energy principles to explain the flow of energy in living systems, such as those that occur in the cellular metabolic pathways of photosynthesis and cell respiration,			

Course SLOs	Assessment Method Description	Results	Actions
or the relationships observed between autotrophs and heterotrophs in ecosystems. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2016-17 (Spring 2017) **Input Date:** 11/08/2013			

ECC: BIOL 102:Principles of Biology II

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #1 Scientific Method - The student will understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2013-14 (Spring 2014) **Input Date:** 11/08/2013	**Exam/Test/Quiz -** The student will be given an article to read and 6 questions to answer from the article. **Standard and Target for Success:** 70% of students will score at least 4 correct out of 6 possible questions.		
SLO #2 Tools - The student will be able to use the compound and dissecting microscope to observe cells and microorganisms. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2015-16 (Spring 2016) **Input Date:** 11/08/2013	**Performance -** see attached assessment method and rubric. **Standard and Target for Success:** 75% of students will demonstrate competent use of the microscope by scoring at level 3 or higher on the rubric. **Related Documents:** Biology SLO Proficiency with the Microscope 2016.doc	**Semester and Year Assessment Conducted:** 2015-16 (Spring 2016) **Standard Met? :** Standard Met 62 students were assessed for Microscope proficiency in two sections of Biology 102. This is a second course in the Biology Majors sequence and most students in the course have experience with the use of microscopes prior to taking this class. 47 of the 62 students who were assessed scored a 4/4 on the rubric, demonstrating the highest level of performance, able to locate a specimen, focus it in high power and make appropriate adjustments to the fine focus and lighting. 15 students scored 3/4 on the rubric, demonstrating the ability to prepare the slide and focus on the specimen in low and high power. They needed some prompting in order to make the fine adjustments to lighting for best contrast and view. While this isn't always needed, it is important to know that proper lighting will affect the clarity. 100% of students were successful at demonstrating competency in the use of the microscope. The standard was met. (09/08/2016) **Faculty Assessment Leader:** Steve Leonelli **Faculty Contributing to Assessment:** Nancy Freeman	**Action:** Based on the data and success rate of the Bio 102 students, it may suggest that we should consider modifications to the current SLO for this particular course. There are a variety of important tools that could be considered for this SLO such as the use of DNA Gel Electrophoresis equipment and DNA Fingerprint analysis. The faculty involved in teaching this course will need to have a discussion to consider this change. (09/08/2016) **Action Category:** SLO/PLO Assessment Process
SLO #3 Content Knowledge (Mitosis) - The student will be able to describe key activities in cell replication.			

Course SLOs	*Assessment Method Description*	*Results*	*Actions*

Course SLO Status: Active
Course SLO Assessment Cycle: 2016-17 (Spring 2017)
Input Date: 11/08/2013

ECC: BIOL 103:Fundamentals of Molecular Biology

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #1 Scientific Method - The student will understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2013-14 (Spring 2014) **Input Date:** 07/01/2013	**Essay/Written Assignment -** The students will be presented with an experimental scenario. Students will be asked to: state their observation(s); propose a question derived from their observation(s); develop a hypothesis (H0 or HA); generate a prediction consistent with the hypothesis; propose an experiment to test the hypothesis; and articulate potential outcomes of the experiment. **Standard and Target for Success:** The goal is to have more than 50% of the students at Level 4 or higher. At minimum, 70% of students should be at Level 3 or above. See the rubric document.		

Course SLOs	*Assessment Method Description*	*Results*	*Actions*

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
	Related Documents: SLO Scientific Method Rubric Bio 103 Spring 2014.pdf		
SLO #2 Content Knowledge (Central Dogma) - The student will be able to provide a detailed explanation of how the unit-by-unit transfer of genetic information occurs from DNA to RNA	**Exam/Test/Quiz -** A 2-part assessment tool consisting of questions on two exams was used. The multiple choice part of one exam focused on DNA replication,	**Semester and Year Assessment Conducted:** 2015-16 (Spring 2016) **Standard Met? :** Standard Met Assessment Data	**Action:** 1) I must reinforce the Central Dogma of Molecular Biology, i.e. the flow of biological information, from the outset. I have put the scheme on the board and have used

Course SLOs	Assessment Method Description	Results	Actions
to Protein. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2015-16 (Spring 2016) **Input Date:** 11/08/2013	and transcription elongation and termination. The written components of two exams focused on the following: A) Recall of the macromolecular players (DNA, RNA, protein) and the molecular biological processes that these entities are involved in (replication, transcription, and translation). Collectively, these elements are known as the Central Dogma of Molecular Biology. AND B) Detailed understanding of transcription initiation, and translation initiation, elongation, and termination. Class averages were obtained from the rubric scores. Standards or Rubric 5: Has demonstrated a detailed understanding of the initiation, elongation, and termination phases of replication, transcription, and translation. 4: Has demonstrated an adequate understanding of the initiation, elongation, and termination phases of replication, transcription, and translation. Minor elements of the phases are missing from at least one of the molecular biological processes. 3: Has demonstrated some understanding of the initiation, elongation, and termination phases of replication, transcription, and translation. Significant elements of the phases are missing from at least one of the molecular biological	The multiple choice component of one exam evaluated the students' knowledge of DNA replication, and transcription elongation and termination. Thirty-one students were evaluated and the average class was 78.1%. This indicates that the class as a whole possessed, at minimum, an adequate understanding of these processes. Five of the thirty-one students earned a D or F. This represents 16.1% of the students assessed. Conversely, 83.9% of students scored a C or better. The written component of the exam covered transcription initiation, which is a more challenging process then elongation and termination. Of the 31 students, 22 scored a 3 or better as assessed by the rubric. This represents 71.0% of the class. Of the remaining 9 students, there were 8 students that were at level 2 and 1 student below that at level 1. The overall score was a 3.3. This is an improvement from the previous assessment cycle where the overall average was 2.7. With that cycle, 10 students scored at level 2 and 4 students scored at level 1. For translation, the assessment scores for the class are as follows: initiation, 3.2; elongation 3.1; and termination, 4.2. In terms of the % of students reaching level 3 or better, 77.4% (24/31) did so for initiation, 67.7% (21/31) for elongation, and 100% (31/31) for termination. It is not surprising that elongation, the more involved process, showed a lower score than termination, the easier process to articulate. Observable Patterns The overall class average of 3.5 and percentages above 70% (with the exception of one at 67.7%) suggest that the class as a whole exhibits an adequate understanding of the fundamental processes of information transfer within the cell. At minimum, the majority of the students can recall most of the fundamental steps in the transfer of biological information. On an exam question (on the exam administered prior to the one elaborated upon above), I	it as my overarching course theme. I have made an effort to reinforce the flow every class period. With the introduction of each new topic, I revisit the biological flow of information and conduct a brief review of what we have covered, articulate where we are currently at, and state what we will discuss moving forward. I will continue using this approach. It is clear that for a majority of students, this works. 2) I will employ the following to improve student learning: i) Increased engagement of the students is an essential strategy. Asking students questions, allowing them to answer and propose ideas of their own promotes discussion that reinforces content knowledge. ii) Increased use of props to visually represent key concepts. iii) Increased use of animations. There is an abundant repertoire of short clips and videos that I could take advantage to supplement content presentations and discussions. This is my weakest area. I have found that I have so much material to cover that the interruption of the lecture/discussion flow with animations/videos is highly unappealing. I must find a way to better integrate the material. I will speak with colleagues to solicit ideas on how to better approach the

Course SLOs	Assessment Method Description	Results	Actions
	processes. Levels 2 and 1 of the rubric are described in the related document (they are truncated in this field). **Standard and Target for Success:** At least 70% of students will achieve at least a level 3 on the rubric	asked for the basic flow of information. 72.2% (26/36 students) had correctly addressed all the key elements or had one element missing of the basic flow of information that included the notion that DNA is replicated, and it is accessed for transcription for the generation of mRNA that can then be used to generate protein by way of translation. 27.8% forgot two or more elements. Of this subset, 3 students did not answer the question and 4 students had a completely incorrect response. There were problem areas with a more detailed articulation of the key phases for the processes, however. For all the molecular biological processes assessed, the prokaryotic phases were the focus with the eukaryotic examples serving as the basis for comparison. Generally speaking, there is an increase in the level of complexity from the prokaryotic cell to the eukaryotic cell. The elongation phases for these processes are the most familiar for the students because of a basic presentation in Biology 102. There is an increase in the level of complexity and detail for all the phases in Biology 103. The data suggest that the initiation phase for transcription and the elongation phase for translation are the most problematic. It is clear I need to spend more time on and be more deliberate about these molecular biological processes. I must also employ methods that will help reinforce these concepts. Reinforcement of the distinctions between prokaryotic and eukaryotic organisms may also assist the students in their understanding. (09/13/2016) **Faculty Assessment Leader:** Teresa P. Palos **Related Documents:** SLO Assessment Central Dogma Bio 103 Spring 2016.pdf	integration. 3) Changes to curriculum are not necessary. Exploring different ways to present the curriculum is essential. For example, I have incorporated variations of the "think-pair-share" approach in a variety of courses. I need to increase the application of this approach in Biology 103. 4) The assessment data suggests that perhaps a hands-on approach for content understanding is necessary. Reactivation of Biology 104 (our molecular biology techniques course) along with the requisite financial support to run the course would strongly complement and enhance the learning of the content in Biology 103. (09/13/2016) **Action Category:** Teaching Strategies
SLO #3 Content Knowledge (Control of Gene Expression) - The student will be able to explain various prokaryotic and eukaryotic gene expression control mechanisms. **Course SLO Status:** Active			

Course SLOs	*Assessment Method Description*	*Results*	*Actions*

Course SLO Assessment Cycle: 2016-17 (Spring 2017)
Input Date: 11/08/2013

ECC: BIOL 15:Environmental Aspects of Biology

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #1 Scientific Method - The student will understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2013-14 (Spring 2014) **Input Date:** 04/05/2014	**Exam/Test/Quiz -** Students were presented with an article. They read the details of the article, and responded to 6 multiple choice questions addressing aspects of the scientific, including identification of the original question the authors explored. **Standard and Target for Success:** We are looking for students to earn a score of 4 or better out of 6 on a short question series about a science article.		
SLO #2 Content Knowledge (Energy Flow) - Students will use basic energy principles to explain the flow of energy in living systems, such as those that occur in the cellular metabolic pathways of photosynthesis and cell respiration, or the relationships observed between autotrophs and heterotrophs in ecosystems. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2016-17 (Spring 2017) **Input Date:** 11/08/2013	**Exam/Test/Quiz -** A common set of questions to assess aspects of Material Cycling through the living world were embedded into a larger unit test for Environmental Biology, Bio 15. **Standard and Target for Success:** 70 % of students will get 3 of the 4 questions correct. **Related Documents:** Common questions Environmental Aspects of Bio - Material flow.docx		
SLO #3 Content Knowledge (Materials Cycling) - Students will describe how biologically significant materials move between the biotic and abiotic components of an ecosystem and the role living things play in the cycling of these nutrients. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2015-	**Exam/Test/Quiz -** We used a common set of questions, one of which included a a small embedded image, to illustrate and provide choices for students regarding a few multiple choice questions concerning concepts related nutrient cycling and energy flow. **Standard and Target for Success:**	**Semester and Year Assessment Conducted:** 2015-16 (Spring 2016) **Standard Met? :** Standard Not Met The student responses conveyed a range of understanding of the content we assessed. A few of the questions seemed very clear and earned high responses (for % of student who selected the correct answers) while two of the questions were much lower. To me, the response to those latter 2 questions in particular make me feel that the standard was	**Action:** More clarity in aspects of nitrogen cycle and phosphorous cycle, as well as a further emahasized explanation of the difference between nutrient and matter cycling within a system, while energy (usually light energy) flows through a system via handouts and/or homework questions. (09/10/2016)

Course SLOs	Assessment Method Description	Results	Actions
16 (Spring 2016) **Input Date:** 11/08/2013	We look for 70% of the students to earn a score of 70% or more on the assessment questions. **Reviewer's Comments:** Two sections of Bio 15 Environmental Aspects of Biology were undertaken in the first half of the Spring 2016 semester.	not met. Reflections from both myself and my colleague allow us to think of some ways to rephrase those questions for better clarity, and to make sure more details related to that particular matter and energy content are further elucidated in future semesters. For example, if more time was spent lecturing on nitrogen fixing bacteria, and less time spent on eutrophication, then that might help explain students confusing runoff as only something that could happen in the phophorous cycle and not as a consequence of the nitrogen cycle. One possible way could be to include one or more embedded images, such as the successful use and demonstration of a 70% or higher correct response by 70% or more of the students on Question # 1. (09/10/2016) **Faculty Assessment Leader:** Bryan Carey **Faculty Contributing to Assessment:** Jessica Padilla **Related Documents:** Common questions Environmental Aspects of Bio - Material flow.docx	**Action Category:** Teaching Strategies

ECC: BIOL 16:Field Entomology

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #1 Scientific Method - The student will understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2015-16 (Spring 2016) **Input Date:** 11/08/2013	**Exam/Test/Quiz -** Students read a research summary article "Owls Use Tools" and answer questions about the scientific process used in the study. See attached article and assessment. (Active **Standard and Target for Success:** 75% of the students will achieve a 70% or higher on the analysis question quiz after reading the article **Related Documents:** Owl article assesment questions spring 2014.doc Rubric for owl article and description.doc Science News Owl article.docx	**Semester and Year Assessment Conducted:** 2015-16 (Spring 2016) **Standard Met? :** Standard Not Met Nineteen students were assessed. 11 students scored 6/6 correct. 3 students scored 5/6. 3 students scored 4/6. 1 student scored 3/6 and 1 student scored 2/6. 74% met the target. The question most often answered incorrect by the students involved understanding the evidence and evaluating if it supported the researchers hypothesis. In addition, some students were unable to recognize that there can be more than one hypothesis for the same research question. (03/21/2016) **Faculty Assessment Leader:** Jeanne Bellemin	**Action:** We will provide multiple opportunities within the semester for students to develop multiple hypothesis to a questions, and provide examples of research that looked at many hypothesis to explain a biological phenomenon. (09/08/2016) **Action Category:** Teaching Strategies
SLO #2 Tools - The student will be able to observe insects on compound and dissection microscopes. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2015-16 (Spring 2016) **Input Date:** 11/08/2013	**Presentation/Skill Demonstration -** Students will be observe a beetle, using the dissecting microscope to focus and magnify specific body regions and parts. **Related Documents:** Rubric Microscope Bio16 v 2 spr 2016.doc	**Semester and Year Assessment Conducted:** 2015-16 (Spring 2016) **Standard Met? :** Standard Met 20 Students were assessed and 100 % were able to achieve a level 4 score on the assessment rubric. The standard was met. These students are in a class where they use a dissecting scope for 4 hours each night, twice a week, looking at the smallest details of tiny insect bodies to distinguish types of insects and specific species. Therefore, they are very accomplished with the use of this important instrument as it relates to the identification of specific insects. (05/12/2016) **Faculty Assessment Leader:** J. Bellemin	**Action:** The dissecting scope is the most important tool of Entomology for purposes of identification. While students performed this skill with a high level of achievement, it is a result of continual practice over the course of the semester. It is important to know that most students do not have this skill at the start of the semester. It could be informative to evaluate students informally at the start of the semester in order to determine the degree of improvement over the semester. (09/08/2016) **Action Category:** SLO/PLO Assessment Process

Course SLOs	Assessment Method Description	Results	Actions
SLO #3 Content Knowledge & Tools (Dichotomous Keying) - The student will be able to determine the identity of common insects to order by applying knowledge of insect anatomy and using a dichotomous key. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2013-14 (Spring 2014), 2016-17 (Spring 2017) **Input Date:** 11/08/2013	**Presentation/Skill Demonstration -** Students will be given an "unknown" insect specimen to key out using the insect key in their textbook "How to Know the Insects". Students will determine the order of the insect by accurately employing the concepts of insect anatomy and following the dichotomous couplet choices in the key. #1. Student cannot correctly determine if insect is in Order Odonata. (order key) #2. Student can correctly determine that hind wings are wider at base than front wings (couplet 1) #3. Student correctly sees triangles in front and hind wings are similar in shape (couplet 2) #4. Student can determine presence of brace vein at inner end of stigma on dragon fly wings. (couplet 3) #5. Students can determine that compound eyes meet for much of the length on dorsal side of head.(couplet 4) **Standard and Target for Success:** It is expected that 70% of the students will score to #4 or above on this dichotomous keying exercise.		

ECC: BIOL 17:Marine Biology

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #1 Scientific Method - The student will understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2013-14 (Spring 2014) **Input Date:** 07/01/2013	**Exam/Test/Quiz -** Students were presented with an article. They read the details of the article, and responded to 6 multiple choice questions addressing aspects of the scientific, including identification of the original question the authors explored. **Standard and Target for Success:** We are looking for students to earn a score of 4 or better out of 6 on a short question series about a science article. **Reviewer's Comments:** Marine Biology Lecture The results for 27 students were . This produces a mean score value (total score count divided by 27 students) of 3.9 out of 6 questions for the first of two lecture sections. I did not expect a relatively high percentage for this course. I need more repetition I think,and it does not come very directly in the content of the text, as it does in Biology 15. I may need to try a hands-on or in-class group participation lecture activity or out of class time web assignment to encounter and clarify concepts with the scientific method. In this section, question 3 was the most missed.		
	Exam/Test/Quiz - Students were presented with an article. They read the details of the article, and responded to 6 multiple choice questions addressing aspects of the		

Course SLOs	Assessment Method Description	Results	Actions
	scientific method, including identification of the original question the authors explored. **Standard and Target for Success:** We are looking for students to earn a score of 4 or better out of 6 on a short question series about a science article. **Reviewer's Comments:** Marine Biology Lecture second section. The results for 23 students were . This produces a mean score value (total score count divided by 23 students) of 4.1 out of 6 questions for the first of two lecture sections. I did not expect a relatively high percentage for this course. I need more repetition I think,and it does not come very directly in the content of the text, as it does in Biology 15. I may need to try a hands-on or in-class group participation lecture activity or out of class time web assignment to encounter and clarify concepts with the scientific method. In this section, question 1 and 5 were equally missed.		
SLO #2 Content Knowledge (Energy Flow) - Students will use basic energy principles to explain the flow of energy in living systems, such as those that occur in the cellular metabolic pathways of photosynthesis and cell respiration, or the relationships observed between autotrophs and heterotrophs in ecosystems. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2016-	Provide embedded questions during exam covering Energy Flow. Questions were discussed, selected, and agreed upon by adjunct and full-time faculty who are delivering the assessments. **Standard and Target for Success:** We hope to see 80% or more earn 3/5 or better on the 5 questions presented during the exam. **Related Documents:** Common questions Environmental		

Course SLOs	Assessment Method Description	Results	Actions
17 (Spring 2017) **Input Date:** 05/12/2014	Aspects of Bio - Material flow.docx		
SLO #3 Content Knowledge (Materials Cycling) - Students will describe how biologically significant materials move between the biotic and abiotic components of an ecosystem and the role living things play in the cycling of these nutrients. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2015-16 (Spring 2016) **Input Date:** 11/08/2013	**Exam/Test/Quiz -** Pose 5 multiple choice questions to students regarding energy flow **Standard and Target for Success:** A reasonable expectation might be that 70% or more of the students will earn a 70% or higher score for this content knowledge assessment topic. **Reviewer's Comments:** This is a lecture-only course. Different texts emphasize where when and how much detail is relayed regarding photosynthesis and cellular respiration, or through the alternate means of explaining energy flow form producers to consumers.	**Semester and Year Assessment Conducted:** 2015-16 (Spring 2016) **Standard Met? :** Standard Met Question # 1, 91% correct; Question #2, 74% correct; Question # 3, 67% correct ; Question #4, 74% correct; Question #5, 67% correct. (09/06/2016) **Faculty Assessment Leader:** Bryan Carey **Faculty Contributing to Assessment:** Dr. Chih Lew and Samuel Lee **Reviewer's Comments:** If the average of all questions is collapsed, the collective responses of these students in 2 sections of Marine Biology Lecture do meet the minimum expectation. While 3 of the 5 questions did meet or exceed the anticipated/expected goal of 70% or more students earning 70% competency for these questions, the lower scores for Questions #3 and # 5 are of concern. Some students missed part of the course when much of this lecture topic was addressed prior to the time of the exam and assessment questions being provided. Additionally, the way in which the energy flow topic is highlighted or emphasized is not as direct a match with the way the questions were posed. Dr. Lew commented that she felt the need to provide more of a Bio 10 lecture delivery to provide content for students to understand energy flow than the way the regular course text had addressed energy flow to that a point in the course.	**Action:** Provide supplemental content such as from a Biology 10 course or select a new course text that more adequately emphasizes the subject matter. Additionally, make time to go over energy flow more than once ahead of any lecture quiz, or an assessment episode, or through embedded exam questions covering the topic. (09/06/2016) **Action Category:** Teaching Strategies **Follow-Up:** Employ one or more strategies from above-mentioned Action to seek improved understanding and responses form students regarding energy flow. (09/06/2016)

ECC: BIOL 8:Biology of Plants

Course SLOs	*Assessment Method Description*	*Results*	*Actions*
SLO #1 Scientific Method - The student will understand and apply principles of the scientific method; recognizing an idea based on reproducible evidence. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2013-14 (Spring 2014) **Input Date:** 11/08/2013	**Exam/Test/Quiz -** Students were given a 6 question scantron-based quiz. **Standard and Target for Success:** Hoping for more than 70% of students getting 75%r or more correct. **Reviewer's Comments:** Twenty-three students tested for the SLO Assessment. Seventeen of 23 earned a 4/6 or better on the assessment; however, 67% does not meet expectation of 75% or more correct on scientific method assessment.		
SLO #2 Tools - The student will be able to use the compound and dissecting microscope to observe cells and microorganisms. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2015-16 (Spring 2016) **Input Date:** 11/08/2013	**Presentation/Skill Demonstration -** Students were ask to demonstrate proficiency with a compound light microscope. They had specimens to set-up and view under the scope. There was a range of skills level scores earned, as well as an upper time limit to find specimens at low or high power. **Standard and Target for Success:** Based on Rubric, I would expect at least 70% or more of students to earn a 3 or a 4 out of 4. **Reviewer's Comments:** Due to time constraints, some students were tested in lab room with old scopes. To try and catch some people that had been absent, I tried having some demonstrate same skill with newer scopes in lecture room. There was a noticeable difference in quality of scopes having an effect of either a	**Semester and Year Assessment Conducted:** 2015-16 (Spring 2016) **Standard Met? :** Standard Met 18 of 22 students that completed the course were assessed. 78% of those earned a 3 or a 4 out of 4 on the rubric. The remaining 4 students earned a 2 out of 4. (08/27/2016) **Faculty Assessment Leader:** Bryan Carey **Reviewer's Comments:** BC 8/26/16 While most students were assessed, not 100% were assessed over a span of about 3 different class periods. This needs to be improved in, my opinion, to be more thorough in assessment and in trying to come up with ways to be more efficient int he per student time performing the assessment.	**Action:** I will consider trying to more clearly target a reliable specimen to use, and keep to a discreet time (say 2 minutes) to get a slide on, set and find at low power and then find at high power. (08/27/2016) **Action Category:** SLO/PLO Assessment Process **Follow-Up:** Try monitored time and determine specimen set. (03/15/2017)

Course SLOs	Assessment Method Description	Results	Actions
	higher number rubric, or at least having less time spent between the different scope settings form low to high to find specimens.		
SLO #3 Content Knowledge (Energy Flow) - Students will use basic energy principles to explain the flow of energy in living systems, such as those that occur in the cellular metabolic pathways of photosynthesis and cell respiration, or the relationships observed between autotrophs and heterotrophs in ecosystems. **Course SLO Status:** Active **Course SLO Assessment Cycle:** 2016-17 (Spring 2017) **Input Date:** 11/08/2013			