

# Unit Assessment Report - Four Column

## Foothill College

### Program (BHS-BIOL) - Biological Sciences AS

**Mission Statement:** A. Prepare students for a successful career in the biological sciences, including students planning to transfer to a four-year school.  
 B. Prepare students to be savvy consumers of scientific information, and provide a general education in the life sciences.  
 C. Provide students with the background knowledge and critical thinking skills required to understand important issues such as environmental science, climate change, evolution, disease prevention and basic nutrition.  
 D. Support programs in allied health by providing an education in biological principles including anatomy, physiology, microbiology, nutrition and pharmacology.

**Primary Core Mission:** Workforce

**Secondary Core Mission:** Transfer

PL-SLOs	Means of Assessment & Target / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Program (BHS-BIOL) - Biological Sciences AS - 1 - Upon successful completion of the Biology majors sequence, students can/will be able to use the scientific method to formulate questions, design experiments to test hypotheses, interpret experimental results to draw conclusions, communicate results both orally and in writing, and critically evaluate the use of the scientific method from published sources.  <b>Year PL-SLO implemented:</b> 2010-2011 2011-2012 2012-2013 2013-2014  <b>SLO Status:</b> Active	<b>Assessment Method:</b> In Biology 1A, students will design and conduct an experiment in groups culminating in a poster presentation. <b>Assessment Method Type:</b> Class/Lab Project <b>Target:</b> Students can properly phrase a question and a hypothesis, identify necessary experimental controls, depict experimental results in graphical format, and draw a conclusion supported by results.	03/16/2012 - In phrasing a question, students were able to correctly identify the variables (independent vs. dependent) 89% of the time. Students correctly identified necessary controls 60% of the time. Students drew conclusions based on results 66% of the time. <b>Result:</b> Target Met <b>Year This Assessment Occurred:</b> 2011-2012	05/25/2012 - As students in Biol1A are just starting their scientific educational careers, it is reasonable to expect that not all students will fully grasp each component of the scientific method. Throughout the quarter, students are given the opportunity to "practice" identifying and stating each component in their weekly experiments. Students are also given quiz and exam questions that test their ability to identify and state the different steps to the scientific method. By far, the most difficulty comes in distinguishing a result from a conclusion and in identifying an important control. As students progress through the biology program, they should improve in these areas. I don't think any extra resources are necessary, but more time spent on task.
	<b>Assessment Method:</b> In Biology 1B, students will design and conduct an experiment on plant nutrition and		

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	<p>orally present their results.  <b>Assessment Method Type:</b>  Class/Lab Project</p> <p><b>Assessment Method:</b>  In Biology 1C, students will conduct an experiment in natural selection and present their findings in a written paper.  <b>Assessment Method Type:</b>  Class/Lab Project  <b>Target:</b>  We expect students should have mastery of the process by the end of the course Biology Majors series.</p>	<p>06/14/2012 - Overall the students did fairly well in demonstrating their understanding of the scientific process and communicating results. While all students passed the assignment, there were a few areas which could use improvement including understanding how to communicate methods and results in a clear manner and how to state hypotheses clearly.  <b>Result:</b>  Target Met  <b>Year This Assessment Occurred:</b>  2011-2012  <b>GE/IL-SLO Reflection:</b>  This particular activity in Bio 1C speaks mostly to the Communication and Creative/Analytical thinking IL-SLOs. Students generally did well, but about 40% of the papers had confusing introductions and conclusions which confounded grading a bit. It is hard to tell if this was because students did not bother doing drafts (not required) before submission. I am considering also having anonymous peer review of papers before they are turned into me, using my rubric to see if that improves overall quality of the papers.</p>	<p>06/14/2012 - As approximately 30% of the students did not correctly state the hypothesis, I will have to make sure that I double check them at the start of the experiment to make sure that they really understand what they are doing. A common mistake was to state the null hypothesis without also stating what was expected to change as a result of the experimental procedure. This led them to conclude that their hypothesis was correct (which the data bore out) but often resulted in poor explanations of the experimental results. Also about 95% of the students wrote lengthy overly descriptive explanations of how they conducted the experiments that were in the style of a lab manual description. I may try to provide a couple of simple scientific papers for them to review so that they can see how methods and results should be written. I am considering also having peer review of papers before they are turned into me, using my rubric to see if that improves overall quality of the papers.</p>
Program (BHS-BIOL) - Biological Sciences AS - 2 - Upon successful completion of the biology program, students will be able to apply evolutionary theory at the molecular,	<b>Assessment Method:</b> Students will be given a list of questions at the beginning of Biology 1A related to evolutionary theory at different levels of the		

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<p>cellular, organismal and population levels to explain the unity and diversity of life.</p> <p><b>Year PL-SLO implemented:</b></p> <p>2010-2011</p> <p>2011-2012</p> <p>2012-2013</p> <p>2013-2014</p> <p><b>SLO Status:</b></p> <p>Active</p>	<p>biological hierarchy. The questions will be mapped to each of the three courses (as to where the basic information will be covered). At the end of Biology 1C, students will be tested on those questions and are expected to show mastery.</p> <p><b>Assessment Method Type:</b></p> <p>Exam - Course Test/Quiz</p> <p><b>Related Documents:</b></p> <p><a href="#">List of Assessment questions on evolution</a></p>		