

Core Competencies Assessment 2009-2010: Area III Courses

Mesalands Community College
BIOL 113 Introduction to Biology

Laboratory Science Competencies
BIOL 1114

<u>State Competencies</u> (Learning Outcomes Being Measured)	<u>Assessment Procedures</u> (Process/Instrument named or described – rubric attached)	<u>Assessment Results</u>	<u>How Results Will Be Used To Make Improvements</u>	<u>(Optional)</u> Recommendations/Goals/ Priorities
<p>1. Students will describe the process of scientific inquiry. Students should:</p> <ol style="list-style-type: none"> a. Understand that scientists rely on evidence obtained from observations rather than authority, tradition, doctrine, or intuition. b. Students should value science as a way to develop reliable knowledge about the world. 	<p>Lab exercise ‘Intraspecific Variation in Human Skulls’</p>	<ol style="list-style-type: none"> 1. All students recognized the fundamental importance of data gathering 2. 35% of students did not distinguish between ‘good’ and ambiguous / poor data 3. More than half of the students showed insecurity or confusion in the cases of conflicting i.e., incongruent data 	<p>Immediate evaluation of assessment at end of 2nd lab hour:</p> <ol style="list-style-type: none"> 1. Evaluation and discussion of the nature of the data given 2. Recapitulation of scientific process: observation, hypothesis building (gender determination), testing (by congruence of data), discussion of differing results from student groups <p>Changes: About half of students need feedback from instructor or peers to handle conflicting data adequately</p>	<p>Teaching/Assessment Goals:</p> <ol style="list-style-type: none"> 1. Scientific method is based on observation (here identification and listing of cranial features) 2. Hypotheses need to be tested 3. Essentially the same data can be interpreted differently by student groups 4. Uncertainties arise from incomplete or ambiguous data, or poor data quality
<p>2. Students will solve problems scientifically. Students should:</p> <ol style="list-style-type: none"> a. Be able to construct and test hypotheses using modern lab equipment (such as microscopes, scales, computer technology) and appropriate quantitative methods. b. Be able to evaluate isolated observations about the physical universe and relate them to hierarchically organized explanatory frameworks (theories). 				
<p>3. Students will communicate scientific information. Students should:</p>				

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Core Competencies Assessment 2009-2010: Area III Courses, cont.

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Communicate effectively about science (e.g., write lab reports in standard format and explain basic scientific concepts, procedures, and results using written, oral, and graphic presentation techniques.)				
<p>4. Students will apply quantitative analysis to scientific problems. Students should:</p> <ul style="list-style-type: none"> a. Select and perform appropriate quantitative analyses of scientific observations. b. Show familiarity with the metric system, use a calculator to perform appropriate mathematical operations, and present results in tables and graphs. 				
<p>5. Students will apply scientific thinking to real world problems. Students should:</p> <ul style="list-style-type: none"> a. Critically evaluate scientific reports or accounts presented in the popular media. b. Understand the basic scientific facts related to important contemporary issues (e.g., global warming, stem cell research, cosmology), and ask informed questions about those issues. <p>End – Laboratory Science</p>				

Area III Assessment Contact Person _____ *Name* _____ *Date* _____ Phone number _____