# Core Competencies Assessment 2007-2010: Area III Courses

**Mesalands Community College** **Laboratory Science Competencies**

| **State Competencies** | **Assessment Procedures** | **Assessment Results** | **How Results Will Be Used To Make Improvements** | **(Optional)** Recommendations/Goals/ Priorities |
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| **1. Students will describe the process of scientific inquiry.**<br>Students should:<br>a. Understand that scientists rely on evidence obtained from observations rather than authority, tradition, doctrine, or intuition.<br>b. Students should value science as a way to develop reliable knowledge about the world. | | | | |
| **2. Students will solve problems scientifically.**<br>Students should:<br>a. Be able to construct and test hypotheses using modern lab equipment (such as microscopes, scales, computer technology) and appropriate quantitative methods.<br>b. Be able to evaluate isolated observations about the physical universe and relate them to hierarchically organized explanatory frameworks (theories). | CHEM 115 Introduction to Chemistry I CHEM 1214<br>and<br>CHEM 116 Introduction to Chemistry II CHEM 1224<br><br>Students were assessed on the performance using multiple laboratory exercises.<br><br>See the attached lab as an example. | 63% of students taking CHEM 115 and CHEM 116 successfully met this objective. | Students that were conscientious in collecting and analyzing their data completely and on time did quite well on this objective.<br><br>Some students may need additional encouragement and/or tutoring to be successful in meeting this objective. | |
| **3. Students will communicate scientific information.**<br>Students should:<br>Communicate effectively about science (e.g., write lab reports in standard format and explain basic scientific concepts, procedures, and results using | CHEM 115 Introduction to Chemistry CHEM 1214<br><br>Students performed multiple laboratory exercises and communicated their results in a report. | 66% of students taking CHEM 115 successfully met this objective. | Students in general need more practice writing formal lab reports. We plan to have more prewriting sessions and to use peer feedback to give students more opportunities to improve their writing skills. We may also use the LabWrite website by | |

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| written, oral, and graphic presentation techniques.) | See the attached lab and scoring rubric as an example. | | NCSU as a student resource for lab reports. | |
| **4. Students will apply quantitative analysis to scientific problems.**<br>Students should:<br>a. Select and perform appropriate quantitative analyses of scientific observations.<br>b. Show familiarity with the metric system, use a calculator to perform appropriate mathematical operations, and present results in tables and graphs. | CHEM 115 Introduction to Chemistry CHEM 1214<br><br>Students applied quantitative analysis in multiple formats including quizzes and lab reports.<br><br>See the attached quiz as an example. | 66% of students taking CHEM 115 successfully met this objective. | Students that were conscientious in getting their assignments completely and on time did quite well on this objective. Some students may need additional encouragement and/or tutoring to be successful in meeting this objective. | |
| **5. Students will apply scientific thinking to real world problems.**<br>Students should:<br>a. Critically evaluate scientific reports or accounts presented in the popular media.<br>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.<br><br>End – Laboratory Science | CHEM 116 Introduction to Chemistry II CHEM 1224<br><br>Students investigated the quality of the local water supply. General methods of water purification were discussed. | 66% of students taking CHEM 116 successfully met this objective. | Students that were conscientious in collecting and analyzing their data completely and on time did quite well on this objective.<br><br>Some students may need additional encouragement and/or tutoring to be successful in meeting this objective. | |

**Area III Assessment completed by** _____ **Philip Kaatz** **15 September 2010**

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