Clovis Community College
Core Competencies Assessment 2011-2012 —Area III: Laboratory Science

Class: Biology 113 – Biology for General Education **Faculty: Larry Powell for Anne Luna and Lana Powell**

Common Core No.: NMCCN BIOL 1114

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
1. Students will describe the process of scientific inquiry. Students should: 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.	Students work through problems via the Scientific Method and correlate historical scientific investigations to important concepts in Biology (pre- and post-test taken by 48 students in the spring semester, 2012)	In-class student work showed improvement during the course in their in-class exercises, problem sets, lab activities, and current biology topics. On the exit assessment test, student results were as follows: Comp. 1 = 93% correct (slightly down from 95% last year)	We used a minimum of 70% for each competency as the standard that we aspired to reach and we exceeded that goal in each of the five competencies. Two of our competencies were up (3, 5) and the rest were down (1, 2, 4) but not alarmingly so. This year, to address the drop we saw in competency 3 last year, we emphasized scientific communication. As a result, competency 3 did see an increase over the last two years. We maintained emphasis on 1, 2, 4, and 5 and did see an increase in competency 5.	We will continue to focus on scientific communication as well as scientific inquiry, problem solving, quantitative analysis and scientific thinking. Although we did see improvement in competency 3 and 5 and competencies 1, 2, and 4 had small declines, we will emphasize all five competencies throughout next year.

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
2. Students will solve problems scientifically. Students should: 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).	The Scientific Method is used by students to solve problems and make observations using tools such as microscopes, electronic scales, Punnett Squares, hypotheses are constructed and tested – Lab reports, problem sets, quizzes, lecture exams	Comp. 2 = 87% correct (down from 93% last year)		
3. Students will communicate scientific information. Students should: 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.)	Students communicate effectively about science – Lab reports, Biology in the News (current events reports), in-class presentations	Comp. 3 = 97% correct (up from 74% last year)		

All class assessment forms are due to your division chair by July 1.

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
4. Students will apply quantitative analysis to scientific problems. Students should: 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.	Students perform calculations involving metrics, plant growth, energy, populations, and genetics – Charts, graphs, lab reports, problem sets, lecture exams	Comp. 4 = 83 % correct (down from 95% last year)		

5. Students will apply scientific thinking to real world problems. Students should: 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. End – Laboratory Science	Students critically evaluate current developments in Biology, incorporating basic scientific fats to make their evaluation – Biology in the News, in-class presentations, class discussions A final assessment quiz that has questions that specifically ties to each of the five competencies is given at the end of the semester	Comp. 5 = 97% correct (up from 95% last year)		

Faculty Member Completing Assessment: _____ _____ _____

Name ***Date*** ***Phone Number***

All class assessment forms are due to your division chair by July 1.

Clovis Community College
Core Competencies Assessment 2011- 2012—Area III: Laboratory Science

Class: Biology 115 – Human Biology **Faculty: Larry Powell**

Common Core No.: NMCCN BIOL 1124

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
1. Students will describe the process of scientific inquiry. Students should: 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.	Students will investigate many examples in which scientists have developed reliable knowledge about the human body– In-class exercises, quizzes, lecture exams; labs were used to evaluate student understanding and progress. A pre- and post-test was given to 38 students and were used to determine the percentages provided in this report.	Student work showed satisfactory results for in-class exercises, problem sets, lab activities, and discussions of current events in human anatomy and physiology as indicated by all competencies meeting our desired minimum score of 70%. On the exit assessment test, taken by 38 students in the spring of 2012, results were as follows: Comp. 1 = 71% correct (down slightly from 72% last year)	A minimum of 70% correct for each competency was used as the standard that we aspired to reach. This year, all five competencies exceeded that mark. Two competencies (2 and 5) were up from last year and the rest were down but by a small amount from last year. Scientific inquiry and the scientific process, problem solving, scientific communication, quantitative analysis, and real world problem solving will continue to be stressed throughout the course.	All competencies were in the 71 – 87 percent range – above our 70% minimum. Continued work on problem solving, including real world problem solving, will be the order of the day next year to maintain the upward trend in competencies 2 and 5. Increased work on scientific inquiry and the scientific process, quantitative analysis, and scientific communication will take place next year to address the drops (although slight) in competencies 1, 3, and 4.

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
2. Students will solve problems scientifically. Students should: 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).	Students will use current information to evaluate theories of anatomy and physiology in humans – Lab reports, problem sets, quizzes, lecture exams	Comp. 2 = 82% correct (up from 77% last year)		
3. Students will communicate scientific information. Students should: 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.)	Students will submit lab reports and discuss topics in current anatomy and physiology information and news– Lab reports, threaded discussions	Comp. 3 = 87% correct (slightly down from 88% last year)		

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Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
4. Students will apply quantitative analysis to scientific problems. Students should: 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.	Students will perform calculations involving heart rate, nerve receptors, and reflexes – Charts, graphs, lab reports, problem sets, lecture exams	Comp. 4 = 84% correct (down from 89% last year)		

All class assessment forms are due to your division chair by July 1.

5. Students will apply scientific thinking to real world problems. Students should: 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. End – Laboratory Science	Threaded discussion topics make students apply what they have learned to actual case studies of human anatomy and physiology – Threaded discussions A final assessment quiz that has questions that specifically ties to each of the five competencies is given at the end of the semester	Comp. 5 = 74% correct (up slightly from 73% last year)		

Faculty Member Completing Assessment: _____ _____ _____

Name ***Date*** ***Phone Number***

All class assessment forms are due to your division chair by July 1.

Clovis Community College
Core Competencies Assessment 2011-2012—Area III: Laboratory Science
Class: Chemistry 113 – Chemistry for General Education

Faculty: Larry Powell for Chauntal Andrews, Don Clark, Carrie Phipps, Larry Powell

Common Core No.: NMCCN CHEM 1114

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
1. Students will describe the process of scientific inquiry. Students should: 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.	Students will work through problems using the Scientific Method, specific historical examples will also be investigated that correlate to important concepts in Chemistry (ex.: atomic models, stoichiometry, metrics) – In-class exercises, quizzes, lecture exams, labs are used to evaluated student understanding and progress. A post-test was given to 141 students in the spring of 2012 and was used to determine the percentages provided in this report.	Chemistry 113 classes did meet the 70% minimum success rate we want our students to reach. On the exit assessment test, student results were as follows: Comp. 1 = 90% correct (up from 81% last year)	We used a minimum of 70% correct for each competency as the standard that we aspired to reach. All competencies did reach that mark. Only competencies 2 and 3 were down from last year and those just slightly. Nonetheless, to address that drop, we will stress scientific problem and scientific communication more in Chem. 113 next year. Additionally, we will continue to devote significant time to the mathematical aspects of chemistry throughout the semester – although the results were good in those competencies, they are always areas of concern.	We will reemphasize the importance of the process of scientific problem solving (competency 2) and scientific communication (3) in our Chem. 113 classes next year. Our overall scores for competencies 1, 4, and 5 showed improvement or remained the same this year over last year so we will continue our successful teaching methods in those areas – especially stressing the mathematical areas of chemistry.

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
2. Students will solve problems scientifically. Students should: 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).	The Scientific Method will be used to solve problems and problems will be solved in the following areas: density, metrics, formula mass, per cent composition, balancing equations, stoichiometry – Lab reports, problem sets, quizzes, lecture exams	Comp. 2 = 95% (down from 97% last year)		
3. Students will communicate scientific information. Students should: 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.)	Students will submit lab reports and discuss current topics in Chemistry – Lab reports, Chemistry in the News reports and presentations	Comp. 3 = 86% (down from 92% last year)		

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Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
4. Students will apply quantitative analysis to scientific problems. Students should: 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.	Students will perform Calculations throughout the course in areas listed above – Lab reports, problem sets, lecture exams	Comp. 4 = 93% (same as last year)		

All class assessment forms are due to your division chair by July 1.

5. Students will apply scientific thinking to real world problems. Students should: 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. End – Laboratory Science	Chemistry in the News reports and presentations A final assessment quiz that has questions that correlate to each of the five competencies is given at the end of the semester	Comp. 5 = 95% (same as last year)		

Faculty Member Completing Assessment: _____ _____ _____

Name ***Date*** ***Phone Number***

All class assessment forms are due to your division chair by July 1.

Clovis Community College
Core Competencies Assessment 2011-2012—Area III: Laboratory Science

Class: Chemistry 151 and 152 **Faculty: Apryl Nenortas**

Common Core No.: NMCCN CHEM 1214 and NMCCN CHEM 1224

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
1. Students will describe the process of scientific inquiry. Students should: 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.	Students will work through problems using the Scientific Method, specific historical examples will also be investigated that correlate to important concepts in Chemistry (ex.: precision and accuracy, units of measurement, atomic theory, periodicity of elements, compounds, equations, limiting reactions, gas laws, oxidation/reduction, solutions, acids and bases, titrations, organic an biochemistry) – In-class exercises, quizzes, lecture exams, labs	In-class student work showed improvement in competencies 3, 4 and 5 again this year. Competencies 1 and 2 were consistent with the last two years' results. All competencies exceeded our desired minimum score of 70%. Comp. 1 = 83% (compared to last year's 86%) The minimum standard was set at 70% (or more) correct for each competency.	This competency exceeds the minimum standard by 13%. The class exercises will continue to progress in the same manner as used in 2011 to maintain this success.	Apryl Nenortas took the Chemistry 151 and 152 classes in 2010. Since she took the lead in those classes, enrollment and student performance have both improved significantly. In 2011, Chem 151 was further developed into an online version with an online session of Chem 152 set for development during 2012.
2. Students will solve problems scientifically. Students should: 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).	The Scientific Method will be used to solve problems and problems will be solved in the areas used as examples above – Lab reports, problem sets, quizzes, lecture exams	Comp. 2 = 79% (as compared to last year's value of 80%) This competency exceeds the minimum standard by 9%.	The introduction of a discussion component to address the specifics of the Scientific Method will be used to gauge student understanding and introduce peer-to-peer engagement. The goal is to increase group learning. Contextual understanding is expected to produce better results. The discussion component will be introduced in Summer 2012	Goal: Use weekly or biweekly discussions to gauge student understand and allow exploration of topics. Use contextual discussions (current topics) to keep learning relevant.

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
3. Students will communicate scientific information. Students should: 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.)	Students will submit lab reports and discuss current topics in Chemistry – Lab reports, current events in Chemistry reports and presentations. Students will conduct several literature reviews of current issues in peer reviewed journals.	Comp. 3 = 94% (compared to last year's 93%) This competency exceeds the minimum standard by 24%.	The high level of communication skill is likely due to the use of peer-reviewed journal articles and literature review exercises. This activity will remain a part of the class curriculum and will be adjusted to reflect current scientific issues in society.	Goal: Continue using pertinent literature in class to expose students to the world of scientific literature. Perhaps altering the exercise and having students bring in a scientific article from a popular media source such as TV or newspaper.
4. Students will apply quantitative analysis to scientific problems. Students should: 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.	Students will perform calculations throughout the course in areas used as examples above – Lab reports, problem sets, lecture exams	Comp. 4 = 87% (compared to last year's 86%) This competency exceeds the minimum standard by 17%.	One common challenge for students is developing a working knowledge of the metric system. This was noted in several terms, so during 2011-2012, a scenario formats was introduced to the questions and in-class discussions. Questions were placed in real-world scenarios to make the problem realistic. For example, "*A patient needs 500 mg of medicine. But the pharmacy only makes that pill in 25 g size. What do you do?*" Also, graphs and tables from professional journals were presented to bring scientific concepts into the classroom in a meaningful way.	Goal: Continue developing problems / analysis in a real-world scenario format so students connect the classroom skill with professional world application

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5. Students will apply scientific thinking to real world problems. Students should: 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. End – Laboratory Science	Current events in Chemistry reports and presentations A final assessment quiz that has questions correlating to each of the five competencies was given during the final exam testing period.	Comp. 5 = 87% (compared to last year's 86%) This competency exceeds the minimum standard by 17%.	Applying the scientific method and thinking to a problem is an area that many students find difficult. The introduction of the literature review component and discussion of various types of research in class has improved students' skills in this area	Goal: Maintain the exercises updating items as new discoveries are made (keep the material current and relevant).

Faculty Member Completing Assessment: _____ _____ _____

Name ***Date*** ***Phone Number***

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Clovis Community College
Core Competencies Assessment 2011 - 2012—Area III: Laboratory Science

Class: Geol 113 – Physical Geology **Faculty: Larry Powell for Harry Pomeroy**

Common Core No.: NMCCN GEOL 1114

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
1. Students will describe the process of scientific inquiry. Students should: 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.	Students will work through problems using the Scientific Method, specific historical examples will also be investigated that correlate to important concepts in Geology (ex.: theories of geologic phenomenon, origin of the Earth) – In-class exercises, quizzes, lecture exams, labs	In-class student work showed improvement during the course in their in-class exercises, problem sets, lab activities, and discussions of current events in Geology as indicated by every one of the competencies meeting our desired minimum score of 70%. **On the exit assessment test, given to 29 students, results were as follows:** Comp. 1 = 89.7% correct (up from 82% last year)	We used at minimum of 70% correct for each competency as the standard that we aspired to reach. All competencies reached at least the 70% mark and all of the competencies were up from last year. Although all competencies were up this year, emphasis will continue on the five competencies. The lowest score, competency #5, will be especially stressed and information concerning real world problems will be reinforced throughout the semester.	All competencies were at or above the 70% standard that we sought this year More emphasis on real world problems will be carried out.

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
2. Students will solve problems scientifically. Students should: 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).	The Scientific Method will be used to solve problems and problems will be solved in the following areas: "present is the key to the past exercises, geologic structure formation – Lab reports, problem sets, quizzes, lecture exams	Comp. 2 = 86.2% correct (up from 79% last year)		
3. Students will communicate scientific information. Students should: 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.)	Students will submit lab reports and discuss current topics in Geology – reports and presentations on geological topics such as local topography, hydrology, volcano formation, tsunamis	Comp. 3 = 89.7% correct (up from 89% last year)		

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Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
4. Students will apply quantitative analysis to scientific problems. Students should: 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.	Students will perform calculations throughout the course in areas including earthquake intensity, isotope half-life, radiocarbon dating	Comp. 4 = 82.8% correct (up from 76% last year)		

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5. Students will apply scientific thinking to real world problems. Students should: 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. End – Laboratory Science	Current topics in Geology – through lecture and student discussions **A final assessment test that has questions that correlate to each of the five competencies is given at the end of the semester. This test was given to the spring classes. There were a total of 29 students in the sample.**	Comp. 5 = 72.4% correct (up from 70% last year)		

Faculty Member Completing Assessment: _____ _____ _____

Name ***Date*** ***Phone Number***

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Clovis Community College
Core Competencies Assessment 2011-2012—Area III: Laboratory Science

Class: Physics 113 Survey of Physics and Lab **Faculty: Carl Armstrong**

Common Core No.: NMCCN Phys 1114 and Phys 1124

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
1. Students will describe the process of scientific inquiry. Students should: 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.	Students will conduct five laboratory exercises during the semester. Students will be expected to use the Scientific Method when preparing for, conducting, and writing reports for lab exercises. The lab reports will be graded based on the students' ability to draw valid conclusions from their data. Two questions directly relating to the Scientific Method were on the final exam. Sample size = 11 students.	Lab grades ranged from a low of 77% to a high of 100%. The lowest individual average grade was 63% and the highest was 99%. The student with the average lab grade of 63% failed to complete one of his reports. Otherwise, the lowest individual average grade was 87%. The students scored 100% on the questions covering the Scientific Method on the final exam.	We used a minimum of 70% correct for each competency as the standard that we aspired to reach. Not counting the student with the incomplete lab report, the students did very well. We will continue to emphasize lab exercises next year.	
2. Students will solve problems scientifically. Students should: 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).	During lab exercises, the students will collect data using mechanical and electronic scales, electronic stopwatches, digital thermometers, mechanical spring scales, digital multi-meters, an optical disk, and optical benches. In addition to their lab grades, students were evaluated during course final exams to check for understanding.	The lab grades are discussed above. There were five problems on the final exam dealing with the laboratory exercises. The average score for these five problems was 76%. The students did very well on a problem dealing with electrical circuits (average score of 96%). They did not do well on a problem dealing with light and optics (average score of 62%).	We will spend more time on the calculations involved in the light and optics lab so that the students are comfortable performing these calculations when they get to the final exam.	

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
3. Students will communicate scientific information. Students should: 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.)	Students conducted labs and wrote reports dealing with force vectors, trajectory motion, work and energy, simple harmonic motion, calorimetry, electrical circuits, and light and optics.	The lab report grades are discussed above.	See the write up for Competency #1. In addition, students will be required to make greater use of appropriate computer software when writing their reports next year.	
4. Students will apply quantitative analysis to scientific problems. Students should: 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.	Students were required to perform calculations that required using system international units of measure, calculators, and interpretation of graphs and mathematical curves during every class session. This included classroom examples, homework problems, lab reports, tests, and the final exam.	In addition to the lab report and final exam grades discussed above, the students averaged 85 % on their homework assignments and 81% on their tests.	Students will be given additional opportunities to deal with information presented in graphs and tables. While the average grades were satisfactory and no students had failing grades on their homework assignments, interpreting graphs and tables seemed to challenge some individuals.	

All class assessment forms are due to your division chair by July 1.

5. Students will apply scientific thinking to real world problems. Students should: 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. End – Laboratory Science	Current topics to include climate change, energy sources, nuclear energy, and new discoveries in quantum theory were discussed throughout both semesters. Lively discussions took place on these and other current issues during class sessions. Understanding of the science involved was evaluated on homework problems, tests, and the final exam.	The average grades for homework, tests, and final exams discussed above indicate the students had a satisfactory level of understanding of the science involved with these issues.	We will continue to integrate contemporary issues that relate to science during classroom discussions and on homework assignments, tests, and the final exam.	

Faculty Member Completing Assessment: _____ _____ _____

Name ***Date*** ***Phone Number***

All class assessment forms are due to your division chair by July 1.

Clovis Community College
Core Competencies Assessment 2011-2012—Area III: Laboratory Science
Class: Physics 151 and 152 General Physics I and II and Lab **Faculty: Carl Armstrong**
Common Core No.: NMCCN Phys 1114 and Phys 1124

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
1. Students will describe the process of scientific inquiry. Students should: 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.	Students will conduct five laboratory exercises during first semester and three additional exercised during the second semester. Students will be expected to use the Scientific Method when preparing for, conducting, and writing reports for lab exercises. The lab reports will be graded based on the students' ability to draw valid conclusions from their data. Sample size = 18 students.	Lab grades ranged from a low of 48% to a high of 100%. For the first semester, the lowest individual average grade was 68% and the highest was 96%. For the second semester, the lowest individual average grade was 82% and the highest was 98%.	We used a minimum of 70% correct for each competency as the standard that we aspired to reach. The improved results for the second semester were due to a combination of the students having a greater understanding of what was expected and additional instruction and guidance from the instructor on what was required on their reports.	The improvement during the second semester was significant. Next year, we ensure that we provide addition instruction and guidance to students early during the first semester to help them succeed during their lab exercises.
2. Students will solve problems scientifically. Students should: 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).	During lab exercises, the students will collect data using mechanical and electronic scales, electronic stopwatches, digital thermometers, mechanical spring scales, digital multi-meters, an optical disk, and optical benches. In addition to their lab grades, students were evaluated during course final exams to check for understanding.	The lab grades are discussed above. For both semesters, the final exam grades ranged from a low of 59% to a high of 100%. The average final exam grade was 83%.	While students generally did well correlating their lab experience to the final exam problems, they did struggle with one problem dealing with light and optics. Greater emphasis will be placed on the classroom work and the lab exercise next year.	

Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** (Process/Instrument named or described – rubric attached)	**Assessment Results**	**How Results Will Be Used To Make Improvements**	**(Optional)** Recommendations/Goals/ Priorities
3. Students will communicate scientific information. Students should: 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.)	Students conducted labs and wrote reports dealing with force vectors, trajectory motion, work and energy, simple harmonic motion, calorimetry, electrical circuits, and light and optics.	The lab report grades are discussed above.	See the write up for Competency #1. In addition, students will be required to make greater use of appropriate computer software when writing their reports next year.	
4. Students will apply quantitative analysis to scientific problems. Students should: 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.	Students were required to perform calculations that required using system international units of measure, calculators, and interpretation of graphs and mathematical curves during every class session. This included classroom examples, homework problems, lab reports, tests, and the final exam.	In addition to the lab report and final exam grades discussed above, the students averaged 83 % on their homework assignments and 84% on their tests.	Students will be given additional opportunities to deal with information presented in graphs and tables. While the average grades were satisfactory and no students had failing grades on their homework assignments, interpreting graphs and tables seemed to challenge some individuals.	

All class assessment forms are due to your division chair by July 1.

5. Students will apply scientific thinking to real world problems. Students should: 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. End – Laboratory Science	Current topics to include climate change, energy sources, nuclear energy, and new discoveries in quantum theory were discussed throughout both semesters. Lively discussions took place on these and other current issues during class sessions. Understanding of the science involved was evaluated on homework problems, tests, and the final exam.	The average grades for homework, tests, and final exams discussed above indicate the students had a satisfactory level of understanding of the science involved with these issues.	We will continue to integrate contemporary issues that relate to science during classroom discussions and on homework assignments, tests, and the final exam.	

Faculty Member Completing Assessment: _____ _____ _____

Name ***Date*** ***Phone Number***

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