University of New Mexico – Los Alamos

HED General Education Assessment

Academic Year 2010-2011

AREA III Science

HED AREA III– Science

Academic year: **2010 - 2011**
Department/Program: **Science – course: Astronomy 101/101L**
Person(s) preparing report: Thomas Beach and Oksana Gerlits

Core Competencies Assessment 2010-2011: Area III Courses

New Mexico Institution Name (UNM-LA: Astr 101 + Astr 101L)

Laboratory Science Competencies (NMCCN: Astr 1114)

State Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** **ASTR 101 and ASTR 101L** Introductory Astronomy Lecture and Lab	**Assessment Results** Data from Summer 2010 ASTR 101: 11 students ASTR 101L: 9 students And from Fall 2010 ASTR 101: 13 students ASTR 101L: 8 students	**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.	This competency is measured using questions regarding the scientific method and what constitutes a 'good' scientific theory in ASTR 101 Test 1 and Final exam.	Summer 2010******* On Test #1: 82% of the students correctly answered both questions (full mastery); 18% correctly answered one of the two questions (partial mastery); 0% did not master the material. On the Final exam: 100% demonstrated full mastery; 0% partial mastery; 0% showed no mastery. Fall 2010******* On Test #1: 46% of the students correctly answered both questions (full mastery); 23% correctly	The two classes (Summer vs. Fall) showed a wide difference in performance, with the Fall class doing much worse (even though the Summer class covers the same material in 8 weeks instead of 16). After the Summer class did so well, I continued the same practices in the Fall, so I can conclude that it was the differences in the students that caused the different results, and not the teaching methods (which were identical).	The students in the Fall class did much worse on the pop quizzes that I gave at the start of class (which test to see if the students did the reading assignments). From those quiz results and from asking questions of the students in class, it was clear that the Fall students were NOT doing their reading. So in future, I will emphasize how important the reading component of the course is (I do this, of course, but it obviously didn't get through to the Fall class). Also,the Fall class had several students with poor attendance to lectures, or poor attention during lectures (using their computers or phones to

		answered one of the two questions (partial mastery); 31% did not master the material. On the Final exam: 54% demonstrated full mastery; 36% partial mastery; 10% showed no mastery.		play in Facebook or send messages instead of listening). I cracked down on this, but some of them were still doing it throughout the course ad got poor grades.
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).	This competency is measured by testing the students understanding of the Doppler shift technique we use in the four of the ASTR 101L labs (Earth's Orbital Velocity, Measuring Solar Rotation, Crab Nebula Expansion, and Hubble's Law). This was tested in with a take-home lab (individual project) on using the Doppler method.	Summer 2010******* 77% of the students fully understood the method and applied it properly. 23% understood most of the concepts involved. 0% could not apply the technique at all. Fall 2010******* 12.5% of the students fully understood the method and applied it properly. 12.5% understood most of the concepts involved. 75% could not apply the technique at all or did not even try	Again, there was a huge difference in performance between the Summer and Fall classes on the exact same exercise. Many of the Fall students did not turn in the exercise at all.	When I first implemented this take-home exercise, I made it extra credit, but because it counts as extra lab credit toward their grade, most of the students took advantage of the opportunity to do the exercise. This was not true for the Fall 2010 class, where 75% of them never turned it in. I will make it a mandatory exercise in the future.
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	This competency is measured using the "diagram/short essay" questions that are part of ASTR 101 Tests 1, 2, and 3. The answers to these questions will be evaluated to determine the number of students who can relate all of the concepts, most of the concepts, some of the concepts, and none of the	Summer 2010******* Of the 33 responses to various diagram/short essay questions: 72% indicated full mastery. 25% indicated partial mastery. 3% indicated no understanding. Fall 2010******* Of the 38 responses to	Again, the Fall class did worse, with several of the students not even attempting the questions. Because these questions involve writing an answer rather than picking a multiple choice, the poorer students often to poorly on them or don't even try (whereas they might at least guess on the multiple choice questions).	I will continue to use this diagram/essay question to measure student understanding and ability to communicate, since it is the best measure I have of how well they are doing (I can often tell how well a student is doing in the course based upon just this question).

written, oral, and graphic presentation techniques.)	concepts required to answer the questions.	various diagram/short essay questions: 34% indicated full mastery. 26% indicated partial mastery. 26% indicated no understanding or were not attempted at all.		
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.	This competency is measured using three ASTR 101 test questions that involve actual calculation (applying Kepler's 3rd Law, telescope magnification, and, and Hubble's Law).	Summer 2010****** On Test 1, 82% of the students were able to do the calculation correctly; 18% showed partial mastery. On Test 2, 100% demonstrated full mastery. On Test 3; 91% of the students demonstrated full mastery and 9% partial mastery. Fall 2010****** On Test 1, 54% of the students were able to do the calculation correctly; 46% showed no mastery. On Test 2, 47% demonstrated full mastery. 15% demonstrated partial mastery. 38% demonstrated no mastery. On Test 3; 85% of the students demonstrated full mastery and 15% no mastery.	The poorer performance on the Test #1 question (Kepler's 3rd Law) is expected because it is the hardest of the three.	In future I will again emphasize that students should write down the steps of their calculation so I can better see who has partial understanding (some students simply put down an answer and did not show their work).
5. Students will apply scientific thinking to real world problems. Students should: a. Critically evaluate scientific reports or accounts	This competency is measured using questions regarding the "greenhouse effect" and the ozone layer in ASTR 101 Tests 1 and 2, and the future of our Sun in	Summer 2010******* Earth's greenhouse effect question (Test 1): 82% correct, 18% no mastery, 10% incorrect.	The students very often confuse the greenhouse effect with the ozone layer (a confusion often seen in the popular press as well). Part of this may be because of the	I will again try to emphasize the separation of the two topics (greenhouse effect and the ozone layer) in my lecture.

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	ASTR 101 Test 3.	When the question was repeated on the Final exam: 91% correct, 9% no mastery. Earth's ozone layer question (Test #1): 82% correct, 18% no mastery. When repeated on the final: 100% mastery. Venus's greenhouse effect question (Test 2): 100% correct. When the question was repeated on the Final exam, also 100% correct. Sequence of our Sun's evolution question (Test 3): 91% completely correct; 9% no mastery. When the question was repeated on the Final exam, 91% completely correct; 9% partially correct. Fall 2010******* Earth's greenhouse effect question (Test 1): 31% correct, 69% incorrect, When the question was repeated on the Final exam: 62% correct, 38% incorrect, Earth's ozone layer question (Test #1): 77% correct, 23% no mastery. Venus's greenhouse effect question (Test 2): 85% correct, 15% incorrect	proximity of the two topics in my lecture (they are both in the section about the Earth's atmosphere), even though I specifically tell them that the topics are unrelated.	

		When the question was repeated on the Final exam, 100% correct. Sequence of our Sun's evolution question (Test 3): 70% completely correct; 15% partially correct, 15% no mastery. When the question was repeated on the Final exam, also 70% completely correct; 30% partially correct.		

Area III Assessment completed by ***Thomas E. Beach 5-18-2011 Phone: 505-662-5919 ext605***

Evaluative Rubric for Annual Progress Reports on Gen. Ed. Core Course Assessment of Student Learning –
Astronomy 101/101L

Report Elements	**Exemplary 3**	**Acceptable 2**	**Unacceptable 1**	**Score for each Element**
Gen. Ed. Core Course student learning outcomes (SLOs) that were assessed during the year	SLOs were stated in terms of measurable knowledge, behavior, value, or disposition.	Not all of the SLOs were stated in measurable terms.	No SLOs were listed.	3
Assessment method/measure for each SLO	Two or more appropriate measures were used for each SLO.	At least one measure was used or developed for each SLO.	Measures were not used or developed or were inadequate or were not discussed.	3
Direct measures (at least 1/2 of the measures used are to be direct measures, and at least one direct measure is to be applied to each SLO.)	At least 1/2 of assessment measures were direct, and there was at least one direct measure for each SLO.	No direct measures were used during the reporting year, but direct measures are part of the plan for next year.	No direct measures were implemented or planned for the next year.	3
Participants (students involved for each measure)	Participants were identified for each SLO, and valid sample selection described.	Participants were identified for some SLOs, but there was some lack of clarity.	Participants were not identified.	3
Timeframe in which measures were administered or data collected	The timeframe for administration of measures or collection of data was specified.	The timeframe was specified for some SLOs, but not for others or there was some lack of clarity.	The timeframe was not specified.	3

Setting/forum in which measures were administered or data collected	The setting or forum in which each of the measures were administered or data collected was specified.	The setting or forum was specified for some measures, but not for all, or there was lack of clarity.	The setting or forum was not specified.	3
Results	Results were described for each SLO that was assessed.	Results were described for a sub-set of the SLOs and/or there was some lack of clarity.	Results were not described for the SLOs that were to be assessed.	3
Process for data presentation to and discussion by faculty	The process that was used for the interpretation, review, and discussion of the data by the faculty was described.	The process was described for a sub-set of the SLOs and/or there was some lack of clarity.	The process was not described. It is not clear whether the faculty considered the results of the assessment.	3 (the only faculty member who teaches astronomy did the assessment)
Actions or revisions implemented based on assessment results	Specific actions or revisions have been or will be implemented based on assessment results.	Specific actions or revisions were described but the report of or plan for implementation was unclear or incomplete in some aspects.	There were no specific actions or revisions described.	3
Description of plans for the coming year (2011-2012), including any significant changes to Gen. Ed. Core course SLOs or to the general assessment strategy	***Plans for the coming year and any significant changes in SLOs or the overall assessment strategy are clearly described.***	***Plans and any significant changes were described but in some aspects the description was unclear or incomplete.***	***There was no description of plans for the coming year nor were any significant changes in SLOs or assessment strategy described.***	2

Feedback on the Gen. Ed. Core Course Assessment Annual Progress Report from the Dean

Gen. Ed. Core Course: ___Astronomy 101/101L_____ Date: ___June 13, 2011_____

Department: __Science_____ College: _UNM-LA_____

Report (2010-2011)/plan (2011-2012) status: approved __X___ revise and resubmit _____

Strengths of report and progress on assessment "loop":
Clear statement of SLOs, measurement methods and results.

Concerns/Questions:

Suggestions for future reports or assessment approaches:

Other comments:
"I will again try to emphasize the separation of the two topics (greenhouse effect and the ozone layer) in my lecture"

Why not try to create something visual or a diagram or something that shows how these are contrasted with each other – so that students can see that they are different?

HED AREA III - Science
Academic year: **2010 – 2011** Department/Program: **Science – course: Biol 123/124L**
Person(s) preparing report: Leslie Dendy and Oksana Gerlits
Date submitted: 6/9/2011

Core Competencies Assessment 2010-2011: Area III Courses

University of New Mexico - Los Alamos (UNM-Los Alamos: Biol 123 + Lab General Biology, Biol 124L)

Laboratory Science Competencies (**No NMCCN code**)

	Assessment Procedures Course Name and NMCCN (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.	**Data shown are combined for Fall 2010 and Spring 2011** Competency 1 is addressed by: **Lab assessment:** Short-answer questions on lab final on hypothetical vaccine study (lab final exams attached)	Good understanding corresponds to scores of 75-100% Moderate understanding corresponds to scores of 55-75% Poor understanding corresponds to scores less than 55% **Lab assessment:** Fall 2010: Good understanding: 94% Moderate understanding: 0% Poor understanding: 6% Spring 2011: Good understanding: 75% Moderate understanding: 25%	The same teacher (Dendy) taught these courses Fall 2010 and Spring 2011, and assessed them with many of the same tools in both semesters, so results can at least be compared for those two semesters. But class sizes were small (e.g. 17 students taking lab final in Fall 2010 and 8 in Spring 2011). So observed differences may not be statistically significant, and may not be related to any changes in teaching. The results for this competency seem to be reasonably good already (and were also in 2009-2010). We can probably continue to use the same lab exercises on scientific thinking to convey	Although the same SLO were used for each state competency, and two frequent teachers of 123/124L have discussed a variety of potential common assessment tools, and actually used some of the same tools, the raw results have not been handed down from year to year. And invited faculty may use different tools. It's hard to be sure if comparable results are being compared from one year to the next. Teachers have also not observed each other teaching or discussed with each other any changes they may have made in content presentation that could have made a difference. Department meetings would help to unify presentation and to develop a bank of unified tools for each SLO that continue to be

		Poor understanding: 0%	the general principles.	used from year to year. However, this is very difficult with all part-time faculty, some of whom change from year to year. There is no BIOL department or department chair.
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).	Competency 2 is addressed by: **Lecture assessment:** **2 (general)** molecular genetics problem on final exam : going from DNA to RNA to protein, including a mutation (final exams attached) **2b – tool A:** essay on final exam, on body temperature in relation to 2nd law of thermodynamics & exercise **2b – tool B:** essay on final exam, predicting the effect of lysosomal enzyme mutation (extra credit, no warning)	**Lecture assessment:** <u>Fall 2010:</u> Good understanding: 86.7% Moderate understanding: 6.7% Poor understanding: 6.7% <u>Spring 2011:</u> Good understanding: 100% Moderate understanding: 0% Poor understanding: 0% <u>Fall 2010:</u> Good understanding: 7.7% Moderate understanding: 7.7% Poor understanding: 84.6% <u>Spring 2011:</u> Good understanding: 77.8% Moderate understanding: 11.1% Poor understanding: 11.1% <u>Fall 2010:</u> Good understanding: 0% Moderate understanding: 0% Poor understanding: 100%	**Lecture:** Students did well both semesters on the molecular genetics problem. No changes in teaching are planned. The results for the essay on body temperature were much better in Spring 2011 than Fall 2010 as a result of asking a related question on homework late in the semester to force students to review earlier material. In comparison, no such forced review on lysosomes was included and results for that question remained poor. The plan is to include many more review questions on multiple topics on homeworks throughout the semester to encourage retention.	

	Laboratory assessment: **2a – tool A** Questions in Evidence of Chemical Reactions lab: making hypotheses & predictions About behavior of chalk and in ( ) identity of unknown **2a – tools B & C** (2011 numbering) Enzymes lab: predictions and tests of effects of vinegar on milk protein and in ( ) predictions of effects of heat on denaturation **2a – tool D** fermentation lab: form hypotheses & predictions on effects of yeast concentration,	<u>Spring 2011:</u> Good understanding: 33.3% Moderate understanding: 11.1% Poor understanding: 55.6% <u>Fall 2010:</u> Good understanding: 52.4% (71.4%) Moderate understanding: 9.5% (19%) Poor understanding: 38.1% (9.5%) <u>Spring 2011:</u> Good understanding: 100% (90%) Moderate understanding: 0% (0%) Poor understanding: 0% (10%) <u>Fall 2010:</u> Good understanding: 94% (94%) Moderate understanding: 6% (6%) Poor understanding: 0% (0%) <u>Spring 2011:</u> Good understanding: 78% (44%) Moderate understanding: 22% (22%) Poor understanding: 0%	Lab: Providing more "if…then…" examples of predictions in Spring 2011 seemed to help students make predictions, so it is planned to include even more examples in various labs. Other additions to help guide students' step-by-step thinking in the critical thinking portions of several labs are planned.	

	sucrose, boiling of yeast on fermentation rate; testing, making conclusions	(33%) <u>Not assessed Fall 2010</u>		
	2 – general problem solving Tools A, B, & C = problems to solve on lab final: **Tool A**: Identification of molecular models **Tool B**: Pedigree problem – figuring out genotypes **Tool C**: Punnett square problem – monohybrid cross	<u>Spring 2011:</u> Good understanding: 75% Moderate understanding: 25% Poor understanding: 0% <u>Fall 2010:</u> Good understanding: 47.1% Moderate understanding: 35.3% Poor understanding: 17.6% <u>Spring 2011:</u> Good understanding: 75% Moderate understanding: 25% Poor understanding: 0% <u>Fall 2010:</u> Good understanding: 76.5% Moderate understanding: 5.9% Poor understanding: 17.6% <u>Spring 2011:</u> Good understanding: 75% Moderate understanding: 25%	Students did well on identification of molecular models, pedigree problem, and Punnett square problem as a result of their hands-on work and lab practice with them, as well as coverage in lecture. Once the concepts are grasped, no new critical thinking is required. No changes are planned. Assessment of calculation of	

	2 - Tool D: fermentation lab – calculation of rates of fermentation from volume/time **2 – Tool D**: fermentation lab – graphing fermentation data	Poor understanding: 0% <u>Fall 2010:</u> Good understanding: 70.6% Moderate understanding: 11,8% Poor understanding: 17.6% <u>Spring 2011:</u> Good understanding: 100% Moderate understanding: 0% Poor understanding: 0% <u>Not assessed Fall 2010</u> <u>Spring 2011:</u> Good understanding: 87.5% Moderate understanding: 0% Poor understanding: 12.5% <u>Not assessed Fall 2010:</u> <u>Spring 2011:</u> Good understanding: 87.5% Moderate understanding: 12.5% Poor understanding: 0%	fermentation rates, and of graphing, were new in Spring 2011. Results were good, so no changes are planned.	
3. Students will communicate scientific information. Students should: Communicate effectively about science (e.g., write lab reports in	Competency 3 is addressed by: **Lecture Assessment:** Essay on final exam about negative feedback related to temperature homeostasis	**Lecture assessment:** <u>Fall 2010:</u> Good understanding: 46.7% (?) Moderate understanding: 20%	After the rather poor performance in Fall 2010, more lecture time was devoted to the topic and performance improved in	

standard format and explain basic scientific concepts, procedures, and results using written, oral, and graphic presentation techniques.)	**Lab Assessment:** **Tool A:** writing mini scientific report about dialysis lab (intro, results, & discussion sections) (rubrics for all mini reports included) **Tool B:** writing parts of scientific report of enzyme lab (amylase digestion); abstract & materials & methods for Fall 2010, just abstract for Spring 2011 **Tool C:** writing mini report of fermentation lab (results and discussion sections)	Poor understanding: 20% <u>Spring 2011:</u> Good understanding: 66.7% Moderate understanding: 0% Poor understanding: 33.3% <u>Fall 2010:</u> Good understanding: 83.3% Moderate understanding: 11,1% Poor understanding: 5.6% <u>Spring 2011:</u> Good understanding: 58.3% Moderate understanding: 16.7% Poor understanding: 25% <u>Fall 2010:</u> Good understanding: 50% (?) Moderate understanding: 42.9% Poor understanding: 0% <u>Spring 2011:</u> Good understanding: 44.4% Moderate understanding: 55.5% Poor understanding: 0% <u>Fall 2010:</u> Good understanding: 66.7% Moderate understanding: 33.3%	Spring 2011. It is planned to continue this. Scientific reports are the weakest area for students in general. They require understanding the general gist of the lab reported on, following detailed guidelines about what to include, doing critical thinking, and writing good English. They are new to most students. Guidelines for students have been expanded, but more work needs to be done to help students, e.g. by providing models of scientific writing or actual scientific papers that are simple enough for students at this level to read – not easy. Opportunities to revise for better grades were provided but rarely taken advantage of – don't know how to motivate students to revise. Maybe English teachers would have ideas. Some students avoided doing these entirely, even if the grade was required.	

		Poor understanding: 0% <u>Spring 2011:</u> Good understanding: 42.9% Moderate understanding: 28.6% Poor understanding: 28.6%		
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.	Competency 4 is addressed by: **Lecture assessment:** See competency 2 above (overlaps with problem solving) **Lab assessment:** **4b –** series of metric measurements on lab final – length, volume, mass	**Lab assessment:** <u>Fall 2010:</u> Good understanding: 76.5% Moderate understanding: 23.5% Poor understanding: 0% <u>Spring 2011:</u> Good understanding: 87.5% Moderate understanding: 12.5% Poor understanding: 0%	Measurements of volumes continue throughout the semester, but those of length and mass are concentrated in the early measurement lab. We could try to do more of those later in the semester. But results are pretty good already.	
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	Competency 5 is addressed by: **Lecture assessment:** **5a – tool A:** homework – reading accurately and interpreting an article on trends in kidney donations	**Lecture assessment:** <u>Not used Fall 2010:</u> <u>Spring 2011:</u> Good understanding: 73% Moderate understanding: 13%	Improvement from tool A (early in semester) to tool B (later) could have resulted from either improved understanding acquired during the semester, or just the fact that the weaker	

important contemporary issues (e.g., global warming, stem cell research, cosmology), and ask informed questions about those issues. End – Laboratory Science	**5a – tool B:** homework – reading accurately and interpreting several articles on potential stem cell uses **5b –** essay question on final exam about reasons for creation of GM crops and potential concerns	Poor understanding: 13% <u>Not used Fall 2010:</u> <u>Spring 2011:</u> Good understanding: 100% Moderate understanding: 0% Poor understanding: 0% <u>Fall 2010:</u> Good understanding: 86.7% Moderate understanding: 6.7% Poor understanding: 6.7% <u>Spring 2011:</u> Good understanding: 55.5% Moderate understanding: 0% Poor understanding: 44.4%	students had dropped out by the end. New articles will continue to be selected to keep the topics fresh and motivating. The lower grades on the exam question in Spring 2011 probably reflected the fact that more points were assigned to that question, so that students needed to know more to do well. It would be nice to include more lecture time on contemporary issues, but it's already hard to find time to cover everything.	

Area III Assessment completed by **Leslie Dendy**

Signature ***Printed Name***

06/09/2011

Date

Phone number

Evaluative Rubric for Annual Progress Reports on Gen. Ed. Core Course Assessment of Student Learning – Biol 123/124L

Report Elements	**Exemplary 3**	**Acceptable 2**	**Unacceptable 1**	**Score for each Element**
Gen. Ed. Core Course student learning outcomes (SLOs) that were assessed during the year	SLOs were stated in terms of measurable knowledge, behavior, value, or disposition.	Not all of the SLOs were stated in measurable terms.	No SLOs were listed.	3
Assessment method/measure for each SLO	Two or more appropriate measures were used for each SLO.	At least one measure was used or developed for each SLO.	Measures were not used or developed or were inadequate or were not discussed.	3
Direct measures (at least 1/2 of the measures used are to be direct measures, and at least one direct measure is to be applied to each SLO.)	At least 1/2 of assessment measures were direct, and there was at least one direct measure for each SLO.	No direct measures were used during the reporting year, but direct measures are part of the plan for next year.	No direct measures were implemented or planned for the next year.	3
Participants (students involved for each measure)	Participants were identified for each SLO, and valid sample selection described.	Participants were identified for some SLOs, but there was some lack of clarity.	Participants were not identified.	3

Timeframe in which measures were administered or data collected	The timeframe for administration of measures or collection of data was specified.	The timeframe was specified for some SLOs, but not for others or there was some lack of clarity.	The timeframe was not specified.	3
Setting/forum in which measures were administered or data collected	The setting or forum in which each of the measures were administered or data collected was specified.	The setting or forum was specified for some measures, but not for all, or there was lack of clarity.	The setting or forum was not specified.	3
Results	Results were described for each SLO that was assessed.	Results were described for a sub-set of the SLOs and/or there was some lack of clarity.	Results were not described for the SLOs that were to be assessed.	3
Process for data presentation to and discussion by faculty	The process that was used for the interpretation, review, and discussion of the data by the faculty was described.	The process was described for a sub-set of the SLOs and/or there was some lack of clarity.	The process was not described. It is not clear whether the faculty considered the results of the assessment.	3 (the difficulty of sharing with few or only adjunct faculty is noted)
Actions or revisions implemented based on assessment results	Specific actions or revisions have been or will be implemented based on assessment results.	Specific actions or revisions were described but the report of or plan for implementation was unclear or incomplete in some aspects.	There were no specific actions or revisions described.	3
Description of plans for the coming year (2011-2012), including any significant changes to Gen. Ed. Core course SLOs or to the general assessment	***Plans for the coming year and any significant changes in SLOs or the overall assessment strategy are clearly***	***Plans and any significant changes were described but in some aspects the description was unclear or incomplete.***	***There was no description of plans for the coming year nor were any significant changes in SLOs or assessment strategy***	2

strategy	***described.***		***described.***	

Feedback on the Gen. Ed. Core Course Assessment Annual Progress Report from the Dean

Gen. Ed. Core Course: _Biol 123/124L__ _____ Date: ___June 13, 2011_____

Department: __Science_____ College: _UNM-LA_____

Report (2010-2011)/plan (2011-2012) status: approved __X___ revise and resubmit _____

Strengths of report and progress on assessment "loop":
Clear statement of SLOs, measurement methods and results.

Concerns/Questions:

Suggestions for future reports or assessment approaches:

Other comments:

I highly recommend some follow up on writing lab reports. Either invite an English teacher to do a quick and dirty workshop in class (30 minutes tops) (after the first papers come back, with option to rewrite), and ask Dean to pay teacher for the added time, or see if a English teacher will offer a workshop twice outside class times and ask Dean to pay for that workshop.

HED AREA III– Science

Academic year: **2010 – 2011** Department/Program: **Science – course: Chem 121/123L**
Person(s) preparing report: Oksana Gerlits
Date submitted: 6/9/2011

Core Competencies Assessment 2010-2011: Area III Courses

(Place University/College Name here) (UNM-Los Alamos: Chem 121 + Lab General Chemistry, Chem 123L)

Laboratory Science Competencies (**NMCCN: CHEM 1214**)

State Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** **Course Name and NMCCN** (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.	**Data presented are for Fall 2010** Competency 1 is addressed by: 1. Learning outcome (lecture): Structure of the periodic table Assessment measure: 1. Questions on the final exam Rubric attached	Good understanding corresponds to scores of 75-100% Moderate understanding corresponds to scores of 55-75% Poor understanding corresponds to scores less than 55% **Results:** Good understanding: 45% Moderate understanding: 55% Poor understanding: 0%	I will try to emphasize that the scientific method is based on common sense which is used regularly not necessarily only by scientists.	The results are comparable with the results of assessment of Fall 2009 class. The percentage of students with good understanding is lower but at the same time there are no students with poor understanding. Once again the scientific method is not a simple concept for some of the students and assessment results vary a lot depending on the student major in class.

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).	Competency 2 is addressed by: 1. Learning outcomes (lecture): Stoichiometry of chemical reactions. Assessment measure: 1. Integrative problem on the final exam. Rubric attached	**<u>Results:</u>** Good understanding: 36% Moderate understanding: 9% Poor understanding: 55%	The same as above: The results depend very much on how students are interested in the subject. Provide more examples in the class of how scientific thinking is applicable in everyday life.	This competency is very much related to the first one. If students are comfortable with the concept of "scientific method" They will have less problems with scientific thinking
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.)	Competency 3 is addressed by: 1. Learning outcomes (lecture): Chemical bonding 2. Learning outcome (lab) Reporting, graphing and interpreting of measured data Assessment measure: 1. Question on the final exam, which required writing skills. 2. Final lab report Rubric attached	**<u>Results:</u>** Good understanding: 64% Moderate understanding: 36% Poor understanding: 0%	Compared to the fall 2009 the results improved. Incorporate the second written report into the laboratory portion of the course.	I have followed the plan which was proposed last year. Students were asked to submit only one formally written report. Before actual grading students had opportunity to give their reports to the instructor for his/her feedback. After which they were allowed to do the corrections and submit the report for the final grading. What I probably should try after the first report is ask students to write another report for which they will not have the option for the instructor's feedback and compare the results for the two papers.
4. Students will apply quantitative analysis to	Competency 4 is addressed by:	**<u>Results:</u>**	Results are good. Nothing should be changed	

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.	1. Learning outcomes (lecture): Stoichiometry of chemical reactions 2. Learning outcome (lab): Mathematical analysis of experimental results Assessment measure: 1. Final exam questions 2. Lab final exam questions Rubric attached	Good understanding: 64% Moderate understanding: 27% Poor understanding: 9%	at this time.	
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				

Area III Assessment completed by **Oksana Gerlits** _____ _____ **06/09/2011**

Signature *Printed Name* *Date*

***p* hone number** **662-5919 ext. 603**

Evaluative Rubric for Annual Progress Reports on Gen. Ed. Core Course Assessment of Student Learning
CHEM 121/123L

Report Elements	**Exemplary 3**	**Acceptable 2**	**Unacceptable 1**	**Score for each Element**
Gen. Ed. Core Course student learning outcomes (SLOs) that were assessed during the year	SLOs were stated in terms of measurable knowledge, behavior, value, or disposition.	Not all of the SLOs were stated in measurable terms.	No SLOs were listed.	3
Assessment method/measure for each SLO	Two or more appropriate measures were used for each SLO.	At least one measure was used or developed for each SLO.	Measures were not used or developed or were inadequate or were not discussed.	3
Direct measures (at least 1/2 of the measures used are to be direct measures, and at least one direct measure is to be applied to each SLO.)	At least 1/2 of assessment measures were direct, and there was at least one direct measure for each SLO.	No direct measures were used during the reporting year, but direct measures are part of the plan for next year.	No direct measures were implemented or planned for the next year.	3
Participants (students involved for each measure)	Participants were identified for each SLO, and valid sample selection described.	Participants were identified for some SLOs, but there was some lack of clarity.	Participants were not identified.	3

Timeframe in which measures were administered or data collected	The timeframe for administration of measures or collection of data was specified.	The timeframe was specified for some SLOs, but not for others or there was some lack of clarity.	The timeframe was not specified.	3
Setting/forum in which measures were administered or data collected	The setting or forum in which each of the measures were administered or data collected was specified.	The setting or forum was specified for some measures, but not for all, or there was lack of clarity.	The setting or forum was not specified.	3
Results	Results were described for each SLO that was assessed.	Results were described for a sub-set of the SLOs and/or there was some lack of clarity.	Results were not described for the SLOs that were to be assessed.	3
Process for data presentation to and discussion by faculty	The process that was used for the interpretation, review, and discussion of the data by the faculty was described.	The process was described for a sub-set of the SLOs and/or there was some lack of clarity.	The process was not described. It is not clear whether the faculty considered the results of the assessment.	3 (the difficulty of sharing with few or only adjunct faculty is noted)
Actions or revisions implemented based on assessment results	Specific actions or revisions have been or will be implemented based on assessment results.	Specific actions or revisions were described but the report of or plan for implementation was unclear or incomplete in some aspects.	There were no specific actions or revisions described.	3
Description of plans for the coming year (2011-2012), including any significant changes to Gen. Ed. Core course SLOs or to the general	***Plans for the coming year and any significant changes in SLOs or the overall assessment strategy***	***Plans and any significant changes were described but in some aspects the description was unclear or incomplete.***	***There was no description of plans for the coming year nor were any significant changes in SLOs or***	2

assessment strategy	***are clearly described.***		***assessment strategy described.***	

Feedback on the Gen. Ed. Core Course Assessment Annual Progress Report from the Dean

Gen. Ed. Core Course: _CHEM 121/123L__ _____ Date: ___June 13, 2011_____

Department: __Science_____ College: _UNM-LA_____

Report (2010-2011)/plan (2011-2012) status: approved __X___ revise and resubmit _____

Strengths of report and progress on assessment "loop":
Clear statement of SLOs, measurement methods and results. Good to see improvement in writing with the additional option of getting teacher feedback.
Good job

Concerns/Questions:

Suggestions for future reports or assessment approaches:

Other comments:

Brainstorm with other teachers about practical application demonstrations of scientific thinking or "testing a hypothesis".

HED AREA III– Science

Academic year: **2010 - 2011**
Department/Program: **Science – course: Chem 122/124L**
Person(s) preparing report: Oksana Gerlits
Date submitted:

Core Competencies Assessment 2010-2011: Area III Courses				
New Mexico Institution Name (UNM-Los Alamos: Chem 122 + Lab General Chemistry, Chem 124L)			**Laboratory Science Competencies** (**NMCCN: CHEM 1224**)	
State Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** **Course Name and NMCCN** (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.	**Data presented are for Spring 2011**	Good understanding corresponds to scores of 75-100% Moderate understanding corresponds to scores of 55-75% Poor understanding corresponds to scores less than 55%		
2. Students will solve problems scientifically. Students should: a. Be able to construct and test hypotheses using modern lab equipment (such as microscopes,	Competency 2 is addressed by: 1. Learning outcomes (lecture): Chemical Equilibrium	**Results:** Good understanding: 40% Moderate understanding: 50% Poor understanding: 10%	Continue the used approach: balance between calculation and conceptual questions in class assignments; emphasize applicability of	The current results are very similar to the data from Spring 2009. But what is more important they are much better compared to the results for the same competency from Fall 2010.

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).	2. Learning outcome (lab): Prediction of the experiment outcomes Assessment measure: 1.Final Exam questions 2. Final lab exam questions Rubric attached		chemistry to real life problems.	The group of students in the current class composed of 2/3 of students from Fall 2010.
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.)	Competency 3 is addressed by: 1. Learning outcome (lab): Systematization and reporting of the experimental data Assessment measure: 1. Final lab report Rubric attached	**Results:** Good understanding: 90% Moderate understanding: 10% Poor understanding: 0%	Results are good. Nothing should be changed at this time, continue the approach used.	The same scheme has being used in Chem 124L as in Chem 123L: The number of formal reports has being reduced. The students were offered a lot of help and given feedback for the first reports. They were used as tools to teach and advise the students in scientific report writing. And students were given the opportunity to work absolutely independently on the final lab report.
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.	Competency 4 is addressed by: 1. Learning outcomes (lecture): Chemical Equilibrium 2. Learning outcome (lab): Mathematical analysis of experimental results Assessment measure: 1. Questions on the final exam 2. Questions on the final lab	**Results:** Good understanding: 40% Moderate understanding: 20% Poor understanding: 40%	I would not change anything in the classroom In general, I would suggest to our advisers to make recommendations for students who needs to complete a sequence of courses in one discipline (regardless of the field of discipline) to do it in a row leaving no semesters in between.	The important factor which affects the assessment is the population of student body in the class. The second semester of chemistry unites a challenging cluster of students: about 2/3 of the class are students who completed the first part of general chemistry in the preceding fall semester and ~ 1/3 of the class are students who had

	exam Rubric attached			chemistry one couple or more semesters ago. It is the second group of students which are very challenging. They require a lot of material from the first part to be reviewed and some of that needs to be even relearned. This creates specific problems, they are not able to digest the material with the same speed and to the same end point compared to the students who are continuing the subject.
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				

Area III Assessment completed by **Oksana Gerlits** _____

06/09/2011

Signature ***Printed Name***

Date

Phone number **662-5919 ext.603**

Evaluative Rubric for Annual Progress Reports on Gen. Ed. Core Course Assessment of Student Learning – Chem 122/124L

Report Elements	**Exemplary 3**	**Acceptable 2**	**Unacceptable 1**	**Score for each Element**
Gen. Ed. Core Course student learning outcomes (SLOs) that were assessed during the year	SLOs were stated in terms of measurable knowledge, behavior, value, or disposition.	Not all of the SLOs were stated in measurable terms.	No SLOs were listed.	3
Assessment method/measure for each SLO	Two or more appropriate measures were used for each SLO.	At least one measure was used or developed for each SLO.	Measures were not used or developed or were inadequate or were not discussed.	3
Direct measures (at least 1/2 of the measures used are to be direct measures, and at least one direct measure is to be applied to each SLO.)	At least 1/2 of assessment measures were direct, and there was at least one direct measure for each SLO.	No direct measures were used during the reporting year, but direct measures are part of the plan for next year.	No direct measures were implemented or planned for the next year.	3
Participants (students involved for each measure)	Participants were identified for each SLO, and valid sample selection described.	Participants were identified for some SLOs, but there was some lack of clarity.	Participants were not identified.	3

Timeframe in which measures were administered or data collected	The timeframe for administration of measures or collection of data was specified.	The timeframe was specified for some SLOs, but not for others or there was some lack of clarity.	The timeframe was not specified.	3
Setting/forum in which measures were administered or data collected	The setting or forum in which each of the measures were administered or data collected was specified.	The setting or forum was specified for some measures, but not for all, or there was lack of clarity.	The setting or forum was not specified.	3
Results	Results were described for each SLO that was assessed.	Results were described for a sub-set of the SLOs and/or there was some lack of clarity.	Results were not described for the SLOs that were to be assessed.	3
Process for data presentation to and discussion by faculty	The process that was used for the interpretation, review, and discussion of the data by the faculty was described.	The process was described for a sub-set of the SLOs and/or there was some lack of clarity.	The process was not described. It is not clear whether the faculty considered the results of the assessment.	3 (the difficulty of sharing with few or only adjunct faculty is noted)
Actions or revisions implemented based on assessment results	Specific actions or revisions have been or will be implemented based on assessment results.	Specific actions or revisions were described but the report of or plan for implementation was unclear or incomplete in some aspects.	There were no specific actions or revisions described.	3
Description of plans for the coming year (2011-2012), including any significant changes to Gen. Ed. Core course SLOs or to the general	***Plans for the coming year and any significant changes in SLOs or the overall assessment strategy***	***Plans and any significant changes were described but in some aspects the description was unclear or incomplete.***	***There was no description of plans for the coming year nor were any significant changes in SLOs or***	2

assessment strategy	***are clearly described.***		***assessment strategy described.***	

Feedback on the Gen. Ed. Core Course Assessment Annual Progress Report from the Dean

Gen. Ed. Core Course: _CHEM 122/124L__ _____ Date: ___June 13, 2011_____

Department: __Science_____ College: _UNM-LA_____

Report (2010-2011)/plan (2011-2012) status: approved __X___ revise and resubmit _____

Strengths of report and progress on assessment "loop":
Clear statement of SLOs, measurement methods and results. Good to see improvement in writing with the additional option of getting teacher feedback.

Concerns/Questions:

Suggestions for future reports or assessment approaches:

Other comments:

Work with advisors on student sequencing of science courses, but also consider developing some kind of review materials for students who have been out of the sequence – something that puts the work on them, but guides them. Or should there be a workshop offered through the tutor center by a science tutor (to be paid)?

Core Competencies Assessment 2010-2011: Area III Courses

(Place University/College Name here) (UNM-LA, ENVS 101 and 102L)

Laboratory Science Competencies (No NMCCN)

State Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** **Course Name and NMCCN** (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.	**Environmental Science, Spring 2011** Competency 1 is addressed by: 1. Learning outcome (lecture): Basic environmental science principles: students should be able to explain the basic principles of how the earth works, i.e. the rock cycle and its relation to plate tectonics, earthquakes, and volcanic activity. Assessment measure: questions on exams 1 and 2 2. Learning outcome (lab): Identify different types of rocks: students should be able to identify types of rocks as well be able to explain their origin and infer earth environment at the time of formation.	Good understanding corresponds to scores of 75-100% Moderate understanding corresponds to scores of 55-75% Poor understanding corresponds to scores less than 55% **Results:** Averages test 1 and 2: Good understanding: 77% Poor understanding: 23%	Overall plan: Students who were enrolled in lecture and lab seemed to do better overall. Since the class/lab was in the evening, many students just wanted to go home to work on the lab instead of staying to get help and explanations as they went along. Extra credit online labs were available to enhance the learning experience for motivated students. During the next round of teaching, more emphasis will be placed on the following: 1. Take more time to explain each exercise before students begin working, giving more examples 2. Try to help students with weak math	

	Assessment measure: Laboratory exercises		skill improve their ability to do basic calculations. .	
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).	Competency 2 is addressed by: 1. Learning outcome (lecture): Understand human impacts and their contribution to global warming, energy use, deforestation, and resource depletion. Understand surface water geographical formations and groundwater storage and use. Assessment measure: questions on exam 4 2. Learning outcome (lab): Identify surface water formations, calculate groundwater depletion rates and subsidence rates. Research at least one type of energy through summarizing an article. Assessment measure: Laboratory exercises	**<u>Results:</u>** Averages test 4: Good understanding: 67% Poor understanding: 33%		About 60% of the students in the class did really well (As), and the others did moderately well (Cs) to poorly (Ds). The grade distribution usually tends to resemble an inverse bell curve. I'm not sure how to change this. It seems that some students are just much more motivated and have devoted sufficient time to the course than others.
3. Students will communicate scientific information. Students should: Communicate effectively about science (e.g., write lab reports in	Competency 3 is addressed by: 1. Learning outcome (lecture): Demonstrate a basic understanding of atmosphere, weather, and climate Assessment measure:	**<u>Results:</u>** Averages test 3: Good understanding: 51%		

standard format and explain basic scientific concepts, procedures, and results using written, oral, and graphic presentation techniques.)	questions on exam #3 Assessment measure: Oral presentation to the class using powerpoint.	Moderate understanding: 0% Poor understanding: 49% Two students did not participate, but the other 17 students did very well.		
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.				
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				

Area III Assessment completed by **Sonja Salzman** _____ **5/19/2011**

Signature *Printed Name* *Date*

Phone number **662-5919 ext. 603**

Evaluative Rubric for Annual Progress Reports on Gen. Ed. Core Course Assessment of Student Learning

ENVS 101/102L

Report Elements	**Exemplary 3**	**Acceptable 2**	**Unacceptable 1**	**Score for each Element**
Gen. Ed. Core Course student learning outcomes (SLOs) that were assessed during the year	SLOs were stated in terms of measurable knowledge, behavior, value, or disposition.	Not all of the SLOs were stated in measurable terms.	No SLOs were listed.	3
Assessment method/measure for each SLO	Two or more appropriate measures were used for each SLO.	At least one measure was used or developed for each SLO.	Measures were not used or developed or were inadequate or were not discussed.	3
Direct measures (at least 1/2 of the measures used are to be direct measures, and at least one direct measure is to be applied to each SLO.)	At least 1/2 of assessment measures were direct, and there was at least one direct measure for each SLO.	No direct measures were used during the reporting year, but direct measures are part of the plan for next year.	No direct measures were implemented or planned for the next year.	3
Participants (students involved for each measure)	Participants were identified for each SLO, and valid sample selection described.	Participants were identified for some SLOs, but there was some lack of clarity.	Participants were not identified.	3

Timeframe in which measures were administered or data collected	The timeframe for administration of measures or collection of data was specified.	The timeframe was specified for some SLOs, but not for others or there was some lack of clarity.	The timeframe was not specified.	3
Setting/forum in which measures were administered or data collected	The setting or forum in which each of the measures were administered or data collected was specified.	The setting or forum was specified for some measures, but not for all, or there was lack of clarity.	The setting or forum was not specified.	3
Results	Results were described for each SLO that was assessed.	Results were described for a sub-set of the SLOs and/or there was some lack of clarity.	Results were not described for the SLOs that were to be assessed.	3
Process for data presentation to and discussion by faculty	The process that was used for the interpretation, review, and discussion of the data by the faculty was described.	The process was described for a sub-set of the SLOs and/or there was some lack of clarity.	The process was not described. It is not clear whether the faculty considered the results of the assessment.	3 (the difficulty of sharing with few or only adjunct faculty is noted)
Actions or revisions implemented based on assessment results	Specific actions or revisions have been or will be implemented based on assessment results.	Specific actions or revisions were described but the report of or plan for implementation was unclear or incomplete in some aspects.	There were no specific actions or revisions described.	2 – what is the plan for scientific communication?
Description of plans for the coming year (2011-2012), including any significant changes to Gen. Ed. Core course SLOs or to the general	***Plans for the coming year and any significant changes in SLOs or the overall assessment strategy***	***Plans and any significant changes were described but in some aspects the description was unclear or incomplete.***	***There was no description of plans for the coming year nor were any significant changes in SLOs or***	2

assessment strategy	***are clearly described.***		***assessment strategy described.***	

Feedback on the Gen. Ed. Core Course Assessment Annual Progress Report from the Dean

Gen. Ed. Core Course: _ENVS_101/102L_ _____ Date: ___June 20, 2011_____

Department: __Science_____ College: _UNM-LA_____

Report (2010-2011)/plan (2011-2012) status: approved __X___ revise and resubmit _____

Strengths of report and progress on assessment "loop":
Clear statement of SLOs, measurement methods and results.

Concerns/Questions:

Suggestions for future reports or assessment approaches:

Other comments:

Consider speaking with Communication colleagues about how to improve the scientific communication skills sets. A 51% success rate is too low, yet I know this is a difficult area to address. Come up with some plan for addressing this that is manageable.

Core Competencies Assessment 2010-2011: Area III Courses

New Mexico Institution Name (UNM-LA: Phyc 160)

Laboratory Science Competencies (NMCCN: Phyc 1214)

State Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** **Course Name and NMCCN** (Process/Instrument named or described – rubric attached)	**Assessment Results** Good understanding corresponds to scores of 75-100% Moderate understanding corresponds to scores of 55-75% Poor understanding corresponds to scores less than 55%	**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.	**Physics 160, Fall 2010**		.	
2. Students will solve problems scientifically. Students should: a. Be able to construct and test hypotheses using modern lab equipment	Competency 2 is addressed by: 1. Learning outcome: Motion with constant acceleration	Average: Good understanding: 63% Moderate understanding: 26%	There are many reasons for poor understanding. One reason is poor math skills. My attempts to improve math skills did	

(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).	Assessment measure: Exam questions – rubric attached	Poor understanding: 11%	not result in a measurable improvement. Other reasons include weak motivation, personal and family problems and crises, and sickness at key times. I plan to continue to work on all of these challenges	
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.)				
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.	Competency 4 is addressed by: 1. Learning outcome: Newton's Second Law Assessment measure: exam questions	Average: Good understanding: 80% Moderate understanding: 17% Poor understanding: 3%	Despite noted issues, the results are quite good.	

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	Competency 5 is addressed by 1. Learning outcome: Conservation of Energy and Momentum Assessment measure: Exam questions	Average: Good understanding: 89% Moderate understanding: 9% Poor understanding: 2%	Despite noted issues, the results are quite good.	

Area III Assessment completed by **Michael McNaughton** **05/17/1**

SignaturPrinted Name ***Date***

Evaluative Rubric for Annual Progress Reports on Gen. Ed. Core Course Assessment of Student Learning

PHYC 160

Report Elements	**Exemplary 3**	**Acceptable 2**	**Unacceptable 1**	**Score for each Element**
Gen. Ed. Core Course student learning outcomes (SLOs) that were assessed during the year	SLOs were stated in terms of measurable knowledge, behavior, value, or disposition.	Not all of the SLOs were stated in measurable terms.	No SLOs were listed.	2
Assessment method/measure for each SLO	Two or more appropriate measures were used for each SLO.	At least one measure was used or developed for each SLO.	Measures were not used or developed or were inadequate or were not discussed.	3
Direct measures (at least 1/2 of the measures used are to be direct measures, and at least one direct measure is to be applied to each SLO.)	At least 1/2 of assessment measures were direct, and there was at least one direct measure for each SLO.	No direct measures were used during the reporting year, but direct measures are part of the plan for next year.	No direct measures were implemented or planned for the next year.	3
Participants (students involved for each measure)	Participants were identified for each SLO, and valid sample selection described.	Participants were identified for some SLOs, but there was some lack of clarity.	Participants were not identified.	3
Timeframe in which measures were administered or data collected	The timeframe for administration of measures or collection of data was specified.	The timeframe was specified for some SLOs, but not for others or there was some lack of clarity.	The timeframe was not specified.	3

Setting/forum in which measures were administered or data collected	The setting or forum in which each of the measures were administered or data collected was specified.	The setting or forum was specified for some measures, but not for all, or there was lack of clarity.	The setting or forum was not specified.	3
Results	Results were described for each SLO that was assessed.	Results were described for a sub-set of the SLOs and/or there was some lack of clarity.	Results were not described for the SLOs that were to be assessed.	3
Process for data presentation to and discussion by faculty	The process that was used for the interpretation, review, and discussion of the data by the faculty was described.	The process was described for a sub-set of the SLOs and/or there was some lack of clarity.	The process was not described. It is not clear whether the faculty considered the results of the assessment.	3 (the difficulty of sharing with few or only adjunct faculty is noted)
Actions or revisions implemented based on assessment results	Specific actions or revisions have been or will be implemented based on assessment results.	Specific actions or revisions were described but the report of or plan for implementation was unclear or incomplete in some aspects.	There were no specific actions or revisions described.	1 – need a specific plan
Description of plans for the coming year (2011-2012), including any significant changes to Gen. Ed. Core course SLOs or to the general assessment strategy	***Plans for the coming year and any significant changes in SLOs or the overall assessment strategy are clearly described.***	***Plans and any significant changes were described but in some aspects the description was unclear or incomplete.***	***There was no description of plans for the coming year nor were any significant changes in SLOs or assessment strategy described.***	1

Feedback on the Gen. Ed. Core Course Assessment Annual Progress Report from the Dean

Gen. Ed. Core Course: _PHYC 160_ _____ Date: ___June 22, 2011_____

Department: __Science_____ College: _UNM-LA_____

Report (2010-2011)/plan (2011-2012) status: approved __X___ revise and resubmit _____

Strengths of report and progress on assessment "loop":
Clear statement of SLOs, but need clearer statement of what students were to do with "motion and constant acceleration," etc. The measurement plans are all fine.

Concerns/Questions: Only real concern is how to think about improving outcomes for the one that was poor. The rest actually showed excellent results, so what do you think would improve quantitative analysis? I know that you've discussed with math teachers the issue of weak math skills, and it must be disappointing to see that your attempt to address this didn't show improvement. Do you want to continue trying what you did for another year to see if it can make a difference with other students?

Suggestions for future reports or assessment approaches:

I would suggest that you document (briefly) some of the other things I know you are doing. For instance, you have accommodated learning disabled students appropriately, and you have been aware of student life issues. You also recognize that there are some things out of your control, so one thing you might note is that 2 out of the 3 assessed learning outcomes showed great success. Celebrate that. Then think about the quantitative analysis issue.

Would a workshop provided by math faculty through the tutor center be able to at least help students focus on quantitative analysis – add that vocabulary and skill to their awareness? Not all of the things that can improve learning must happen in your classroom by you.

Other comments:

You are one of our best teachers in the sciences, hands down. Your insights about students are invaluable to other people in our school, including student services.

Core Competencies Assessment 2010-2011: Area III Courses

New Mexico Institution Name (UNM-LA: Phyc 161)

Laboratory Science Competencies (NMCCN: Phyc 1224)

State Competencies (Learning Outcomes Being Measured)	**Assessment Procedures** **Course Name and NMCCN** (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.	**Physics 161, Spring 2011** Competency 1 is addressed by: 1. Learning outcome: Heat: Students will be able to solve problems involving the First and Second Laws of Thermodynamics Assessment measure: Exam questions – rubric attached	Good understanding corresponds to scores of 75-100% Moderate understanding corresponds to scores of 55-75% Poor understanding corresponds to scores less than 55% Average on competency 1: Good understanding: 83% Moderate understanding: 17% Poor understanding: 0%	Students have a satisfactory understanding of tested concepts. Nothing has to be changed at this time.	
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	Competency 2 is addressed by: 1. Learning outcome: Electricity: Students will be able to solve problems involving the principles of electricity and Gauss' Law	Average: Good understanding: 96% Moderate understanding: 4% Poor understanding: 0%	Students have a satisfactory understanding of tested concepts. Nothing has to be changed at this time.	

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).	Assessment measure: Exam questions – rubric attached			
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.)	Competency 3 is addressed by: 1. Learning outcome: Electrical circuits: Students will be able to solve problems involving Ohm's Law and Kirchoff's Laws Assessment measure: exam questions	Average: Good understanding: 89% Moderate understanding: 11% Poor understanding: 0%	Same as above.	
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.	Competency 4 is addressed by: 1. Learning outcome: Magnetism: Students will be able to solve problems involving magnetism and Ampere's Law Assessment measure: exam questions	Average: Good understanding: 88% Moderate understanding: 11% Poor understanding: 1%	Same as above.	
5. Students will apply scientific thinking to real	Competency 5 is addressed by	Average:	Same as above	

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	1. Learning outcome: Induction: Students will be able to solve problems involving induction and Faraday's Law Assessment measure: Exam questions	Good understanding: 86% Moderate understanding: 11% Poor understanding: 3%		

Area III Assessment completed by **Michael McNaughton** _____

Signature ***Printed Name***

Date
05/17/11

Phone number 662-5919 ext.603

Evaluative Rubric for Annual Progress Reports on Gen. Ed. Core Course Assessment of Student Learning

PHYC 161

Report Elements	**Exemplary 3**	**Acceptable 2**	**Unacceptable 1**	**Score for each Element**
Gen. Ed. Core Course student learning outcomes (SLOs) that were assessed during the year	SLOs were stated in terms of measurable knowledge, behavior, value, or disposition.	Not all of the SLOs were stated in measurable terms.	No SLOs were listed.	2

Assessment method/measure for each SLO	Two or more appropriate measures were used for each SLO.	At least one measure was used or developed for each SLO.	Measures were not used or developed or were inadequate or were not discussed.	3
Direct measures (at least 1/2 of the measures used are to be direct measures, and at least one direct measure is to be applied to each SLO.)	At least 1/2 of assessment measures were direct, and there was at least one direct measure for each SLO.	No direct measures were used during the reporting year, but direct measures are part of the plan for next year.	No direct measures were implemented or planned for the next year.	3
Participants (students involved for each measure)	Participants were identified for each SLO, and valid sample selection described.	Participants were identified for some SLOs, but there was some lack of clarity.	Participants were not identified.	3
Timeframe in which measures were administered or data collected	The timeframe for administration of measures or collection of data was specified.	The timeframe was specified for some SLOs, but not for others or there was some lack of clarity.	The timeframe was not specified.	3
Setting/forum in which measures were administered or data collected	The setting or forum in which each of the measures were administered or data collected was specified.	The setting or forum was specified for some measures, but not for all, or there was lack of clarity.	The setting or forum was not specified.	3
Results	Results were described for each SLO that was assessed.	Results were described for a sub-set of the SLOs and/or there was some lack of clarity.	Results were not described for the SLOs that were to be assessed.	3

Process for data presentation to and discussion by faculty	The process that was used for the interpretation, review, and discussion of the data by the faculty was described.	The process was described for a sub-set of the SLOs and/or there was some lack of clarity.	The process was not described. It is not clear whether the faculty considered the results of the assessment.	3 (the difficulty of sharing with few or only adjunct faculty is noted)
Actions or revisions implemented based on assessment results	Specific actions or revisions have been or will be implemented based on assessment results.	Specific actions or revisions were described but the report of or plan for implementation was unclear or incomplete in some aspects.	There were no specific actions or revisions described.	3 – no actions needed
Description of plans for the coming year (2011-2012), including any significant changes to Gen. Ed. Core course SLOs or to the general assessment strategy	***Plans for the coming year and any significant changes in SLOs or the overall assessment strategy are clearly described.***	***Plans and any significant changes were described but in some aspects the description was unclear or incomplete.***	***There was no description of plans for the coming year nor were any significant changes in SLOs or assessment strategy described.***	3 – no changes needed

Feedback on the Gen. Ed. Core Course Assessment Annual Progress Report from the Dean

Gen. Ed. Core Course: _PHYC 161_ _____ Date: ___June 22, 2011_____

Department: __Science_____ College: _UNM-LA_____

Report (2010-2011)/plan (2011-2012) status: approved __X___ revise and resubmit _____

Strengths of report and progress on assessment "loop":
Clear statement of SLOs, measurement, results, etc.
Concerns/Questions

Good job – do you have any insights into why students do so much better in this class than in 160?

Suggestions for future reports or assessment approaches:

Other comments: