

Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Sciences	101	SCI 101 01/08/2020-The Nature of Science
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Physical Sciences	Robert Hagood
Date of Last Filed Assessment Report		

I. Review previous assessment reports submitted for this course and provide the following information.

1. Was this course previously assessed and if so, when?

Yes

June 2016

2. Briefly describe the results of previous assessment report(s).

The students did poorly on the assessment test; this was a department final exam.

3. Briefly describe the Action Plan/Intended Changes from the previous report(s), when and how changes were implemented.

Overall the plan was to use common exam questions throughout the semester to gauge the learning of the students and working with the students on time management.

II. Assessment Results per Student Learning Outcome

Outcome 1: Recognize the steps involved in the scientific method.

- Assessment Plan
 - Assessment Tool: Common Test Questions
 - Assessment Date: Winter 2019
 - Course section(s)/other population: All sections
 - Number students to be assessed: All students

- How the assessment will be scored: The common test questions will be scored against an answer key.
- Standard of success to be used for this assessment: 70% of students will score 70% or higher on the common test questions.
- Who will score and analyze the data: Common test questions will be graded by each instructor and the data will be analyzed by the full-time faculty.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2019		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
17	12

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

Of the 17 students enrolled in the course, only 12 students were still attending the class on the date the test was given to the students.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

The course currently only draws in a population of students that supports one section of the course being offered in a semester.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Using common exam questions, the students were asked to identify concepts about the Scientific Method. These were multiple-choice style questions.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: No
 The students did not meet the assessment goal for this outcome. Only 61.5 percent of the students were able to correctly identify the concepts of the Scientific

Method. This does beg the question of timing with the assessment tool: the concept was covered the first two weeks of the course and the tool was given to the students during week 14 of 15 weeks.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

There do not seem to be any strengths in this outcome. These were multiple-choice questions, so with the class getting lower score than expected, it is difficult to say there were strengths in the results.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Overall the students did not meet the level of success that was expected. As stated before, this could have been a result of the timing of the students taking the assessment tool. So to get a better understanding of the results, in the future, the students will be given assessment tool questions soon after the concepts have been presented in class. If we see improvement, then it will show that the students are understanding the concepts, but time does seem to be a factor. If, on the other hand, the results remain similar, then we can point at the concept not being presented to the students in a way that is allowing them to grasp the concepts very well, and a new approach will need to be broached for communication of these concepts to the students.

Outcome 2: Recognize the general concepts of physics, chemistry, biology, astronomy and earth science.

- Assessment Plan
 - Assessment Tool: Common Test Questions
 - Assessment Date: Winter 2019
 - Course section(s)/other population: All sections
 - Number students to be assessed: All students
 - How the assessment will be scored: The common test questions will be scored against an answer key.
 - Standard of success to be used for this assessment: 70% of students will score 70% or higher on the common test questions.
 - Who will score and analyze the data: The common test questions will be scored by each instructor and the data will be analyzed by the full-time faculty.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2019		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
17	12

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

Of the 17 students enrolled in the course, only 12 students were still attending the class on the date the test was given to the students.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

The course currently only draws in a population of students that supports one section of the course being offered in a semester.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Using common exam questions, the students were asked to identify concepts about Astronomy, Biology, Chemistry, Earth Science, Evolution, and Physics. These were multiple-choice questions which probed the students' understanding of the concepts, seeing if the students could identify the concepts.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

The students were able to meet the standards for this outcome. An overall average of 83.675% was achieved by the students. Individually by concepts, each concept was well represented with high class averages. It is interesting to note the concept with the lowest average was Physics, at 72.2%. As we saw with the Scientific Method, these concepts were taught in weeks 2 and 4, while the students did not take the assessment tool until week 14. Is this a trend for the course? The other concepts were higher as a class average but did not show a strict linear trend for

time lapse between the concept being presented in class and the time the assessment tool was given to the students.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

The students did show a very good grasp of the concepts for this outcome. One of the interesting takes on the data is the class averages based on time of concepts presented to the class and the timing of the assessment tool being completed.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Based on the data, the assessment tool will be given at different times in future assessments. As the concepts are completed in the course, the students will get the assessment tool at intervals closer to the completion of the concepts.

Outcome 3: Differentiate and apply the concepts of toxicology, risk assessment and risk management in relation to scientific issues.

- Assessment Plan
 - Assessment Tool: Common Test Questions
 - Assessment Date: Winter 2019
 - Course section(s)/other population: All sections
 - Number students to be assessed: All students
 - How the assessment will be scored: The common test questions will be scored against an answer key.
 - Standard of success to be used for this assessment: 70% of students will score 70% or higher on the common test questions.
 - Who will score and analyze the data: The common test questions will be scored by each instructor and the data will be analyzed by the full-time faculty.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2019		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
17	14

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

Of the 17 students enrolled in the course, only 14 students were still attending the class on the date the test was given to the students.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

The course currently only draws in a population of students that supports one section of the course being offered in a semester.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Instead of doing an assessment test of the students' understanding of the concepts of Risk Assessment and Risk Management, the students were asked to select an activity they enjoy doing and assess the risk of their chosen activity. The students were able to demonstrate their comprehension of the topic through the report.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

The overall average for the student reports were outstanding, the students received an average score of 91.8 out of 100. The students were able to show that they learned how to properly assess a risk and demonstrated how this risk should be managed. The students in the course did meet and exceed the standard of success.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Overall the students showed a remarkable understanding of the topic. The work they did showed that they understood the process and put in the time to properly complete their work.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Based on the results, I believe we need to continue to help the students understand the process of the concept and their time management. While the students were doing their reports, we talked about the need to work and research their topic for several weeks. I believe it was the method which the class went through while working on their report that helped the students achieve the desired results.

III. Course Summary and Intended Changes Based on Assessment Results

1. Based on the previous report's Intended Change(s) identified in Section I above, please discuss how effective the changes were in improving student learning.

The reoccurring theme in the previous assessment report was student time management. Now in the class we do talk a great deal about time management with the students and the results show that the students are doing a better job of comprehending the topics from the course.

2. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

The course does seem to be reaching the students, with their results on the assessment tools achieving the desired outcomes from the class. Even when reviewing the Scientific Method, the overall class average was 61.5% for the class, and while this is lower than the desired outcome of 75%, it is an improvement from the previous assessment.

3. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

The data and assessment report will be shared with all members of the department at the department meeting during Winter 2020 in-service.

4. Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Assessment Tool	The assessment tool (a departmental exam) will be broken up into sections and given to the students	For the first action, giving the assessment tool closer to when the students study the concepts should give a better view of whether the	2020

	<p>throughout the semester.</p> <p>A second action will be to gather more data from students. To accomplish this, students in the Fall and Winter semesters will all be given the assessment tool, and the data will be gathered throughout the three-year syllabus cycle.</p>	<p>outcomes are being reached or if the outcomes are not being reached by the students.</p> <p>For the second action, one of the biggest issues with the assessment is the number of students taking the course at this time. Twelve students does not give a very good view of the way the course is reaching the outcome levels or not. The small number of students could very well be showing anomalies in the data. Statistically speaking, 12 data points will not have any statistical significance. So more data needs to be gathered to get a better understanding of what is actually going on.</p>	
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5. Is there anything that you would like to mention that was not already captured?

6.

III. Attached Files

[Assessment Toll Data File](#)

Faculty/Preparer:

Robert Hagood **Date:** 01/09/2020

Department Chair: Suzanne Albach **Date:** 01/10/2020
Dean: Victor Vega **Date:** 01/13/2020
Assessment Committee Chair: Shawn Deron **Date:** 03/03/2020

Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Sciences	101	SCI 101 06/13/2016-The Nature of Science
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Physical Sciences	Rosemary Rader
Date of Last Filed Assessment Report		

I. Assessment Results per Student Learning Outcome

Outcome 1: Recognize the steps involved in the science process.

- Assessment Plan
 - Assessment Tool: Departmental Final Exam
 - Assessment Date: Winter 2011
 - Course section(s)/other population: All sections
 - Number students to be assessed: All students
 - How the assessment will be scored: The test will be scored against an answer key.
 - Standard of success to be used for this assessment: 75% of students will score 75% or higher on the test.
 - Who will score and analyze the data: Tests will be taken on Blackboard and scored electronically. The data will be analyzed by the full-time faculty.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2016	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
60	54

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students in all sections of the course who took test #1 were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

This class is only taught face-to-face on the main WCC campus. All sections of the course were assessed which included both day and evening students.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Rather than assess this course using a departmental final exam, we used common test questions that were part of test #1 for the assessment. Nine multiple choice questions were used to assess this outcome. These questions were graded by instructors as part of test #1 and then collected for analysis of student performance.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: No

The average score on the common test questions was 5.4/9 (60.0%). The median score was 5/9 (55.6%). Overall there were only 15 out of 54 students (27.8%) who scored 7/9 (77.8%) or higher on the assessment. There were 25/54 students (46.3%) who scored 6/9 (66.7%). This is well below our desired standard of success.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Overall our students performed poorly on this learning outcome, but over 83% were able to identify the hypothesis in an article describing recent scientific work.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Students had a difficult time distinguishing between the following:

- observation and inference
- inductive and deductive reasoning methods
- hypothesis and theory
- experiment and results
- an actual experimenter and a peer reviewer

Students also had difficulty identifying the term "falsifiable" and recognizing weaknesses in scientific studies that can make conclusions less probable.

One of our major challenges is getting students to devote enough time to completing the take home tests given during the semester. This course was designed to introduce students to the science process and to the major concepts of physics, chemistry, biology, astronomy and earth science. This course is not about doing mathematical calculations and not about converting between the measurement units used by our society and those used by the scientific community, i.e., converting between Fahrenheit and Celsius temperatures or between the "English" and "Metric" units. This course is not about memorizing a lot of information. Students learn experientially by doing many hands-on activities, as well as through weekly textbook reading assignments and weekly reading of summaries of current scientific studies. Because of the importance of students actually being present each week to participate in the class activities, a high percentage of the final course grade is based on attendance and participation. This results in the grades on exams having less weight, and less importance, in the minds of our students. In addition, the tests are take home and we find that students are not allowing enough time to complete them, resulting in a number of them scoring rather poorly on them.

One thing that we can do is work with our students on time management skills and stress the importance of allowing plenty of time to complete each take home test. We will also review the most missed questions to see if they were confusing to students and need to be reworked. Finally, we will increase the amount of time spent on the concepts underlying the most missed questions, both in class and on homework assignments. We can add more science articles to analyze to the homework assigned in the beginning weeks of the semester.

Outcome 2: Recognize the general concepts of physics, chemistry, biology, astronomy and earth science.

- Assessment Plan
 - Assessment Tool: Departmental Final Exam
 - Assessment Date: Winter 2011

- Course section(s)/other population: All sections
- Number students to be assessed: All students
- How the assessment will be scored: The test will be scored against an answer key.
- Standard of success to be used for this assessment: 75% of students will score 75% or higher on the test.
- Who will score and analyze the data: Tests will be taken on Blackboard and scored electronically. The data will be analyzed by the full-time faculty.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
	2016	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
60	54

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students in all sections of the course who took tests #1, #2 and #3 were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

This class is only taught face-to-face on the main WCC campus. All sections of the course were assessed which included both day and evening students.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Rather than assess this course using a departmental final exam we used common test questions that were part of tests #1, #2, and #3 for the assessment. We used 11 multiple choice questions on test #1, 20 multiple choice questions on test #2 and 31 questions on test #3 to assess this outcome. These questions were graded by instructors as part of tests #1, #2 and #3, and then collected for analysis of student performance.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: No

The common test questions for outcome #2 were the last pages of the three exams, which were removed from the tests and saved for evaluation at the end of the semester. Most of these artifacts did not have student names on them so it was not possible to combine the information from each test into one overall evaluation since "student #1" on the first test may not be the same person as "student #1" on test #2, and so on. Consequently, the data from each test must be analyzed separately.

There were 53 students who submitted the test #1 common test questions for outcome #2. (Note: One instructor split test #1 into two parts and had one student who submitted the "part A" common questions for outcome #1 but did not submit the "part B" common questions for outcome #2.)

The average score on the common test questions for this outcome from test #1 was 8.8/11 (80.0%). The median score was 9/11 (81.8%). Since there were 11 outcome #2 questions on test #1, it was not possible for students to score exactly 75% (8.25/11) on this part of the assessment. Overall there were 35 out of 53 students (66.0%) who scored 9/11 (81.2%) or higher on the assessment. There were 40/53 students (75.5%) who scored 8/11 (72.7%). This is below our desired standard of success, but if we consider that 8/11 is closer to the 75% benchmark than 9/11, then we are actually closer to meeting our desired standard of success for the questions from test #1.

There were 55 students who submitted the test #2 common test questions for outcome #2. The average score on the common test questions for this outcome from test #2 was 14.3/20 (71.5%). The median score was 14/20 (70.0%). Overall there were 27 out of 55 students (49.1%) who scored 15/20 (75.0%) or higher on the assessment. There were 32/55 students (58.2%) who scored 14/20 (70.0%) or higher. This is well below our desired standard of success.

There were 54 students who submitted the test #3 common test questions for outcome #2. The average score on the common test questions for this outcome from test #3 was 21.9/31 (70.6%). The median score was 23/31 (74.2%). Overall there were 26 out of 54 students (48.1%) who scored 24/31 (77.4%) or higher on the assessment. There were 31 out of 54 students (57.4%) who scored 23/31 (74.2%) or higher. Finally, there were 34 out of 54 students (63.0%) who scored 22/31 (71.0%) or higher. This is well below our desired standard of success.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Students did well on questions related to the basic terminology and general concepts from physics, chemistry, biology, astronomy and earth science. In particular, students did well on the three questions related to acids and bases, and on six of the seven astronomy questions.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Students had difficulty answering more complicated questions that involved thinking through several steps to arrive at the correct answer, and questions in which none or more than one of the given responses might be correct.

The physics questions that were missed by more than 30% of the students were related to

- identifying Newton's first law in a given scenario
- recognizing the definitions for energy, thermal energy, and refraction
- recognizing that (+) and (-) electrical charges can be separated, but N and S magnetic poles cannot
- identifying the relationships among wavelength, frequency and energy for various types of electromagnetic radiation

The chemistry questions that were missed by more than 30% of the students were related to

- using mass number and atomic number of atoms to determine the number of protons, neutrons and electrons in the atom
- recognizing how ions are formed from atoms and when ionic bonding is present in a substance
- recognizing if a chemical bond is polar or nonpolar
- recognizing that shape is an important factor in determining if a molecule is polar or nonpolar

The biology questions that were missed by more than 30% of the students were related to

- Earth's cycles

- recognizing the definitions of prokaryote and mitosis
- recognizing that human blood levels of HDL should be high, in contrast to the levels of LDL that should be low
- recognizing that every gene contains the code to make one protein
- using Punnett Squares to determine the expected percentages of offspring with a given trait

The one astronomy question missed by more than 30% of students was related to the life cycle of stars. The earth science questions that were missed by more than 30% of students were related to

- recognizing the most common elements found in the crust of the Earth
- identifying the type of tectonic plate interaction that is occurring in a given example

All of the most frequently missed questions on the assessment will be reviewed, particularly those questions that involve more than one concept. Those found to be confusing or too complicated will be re-worked before the next assessment. Additionally, it is difficult to cover "all" of the basic ideas from so many areas of science in a basic survey course. We will examine how much time is currently allotted to each area and prioritize the concepts that are most important in each science area. We may need to cover fewer concepts, but spend more time and do more learning activities on the most important.

Finally, as discussed under outcome #1, we need to work with our students on time management skills and stress the importance of allowing plenty of time to complete each take home test.

Outcome 3: Differentiate the concepts of toxicology, risk assessment and risk management.

- Assessment Plan
 - Assessment Tool: Departmental Final Exam
 - Assessment Date: Winter 2011
 - Course section(s)/other population: All sections
 - Number students to be assessed: All students
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- Who will score and analyze the data: Tests will be taken on Blackboard and scored electronically. The data will be analyzed by the full-time faculty.

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

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	2016	

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
60	54

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students in all sections of the course who took test #3 were assessed.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

This class is only taught face-to-face on the main WCC campus. All sections of the course were assessed which included both day and evening students.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Rather than assess this course using a departmental final exam we used common test questions that were part of test #3 for the assessment. Nine multiple choice questions were used to assess this outcome. These questions were graded by instructors as part of test #3 and then collected for analysis of student performance.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: No
 The average score on the common test questions was 6.4/9 (71.1%). The median score was 6/9 (66.7%). Overall there were 24 out of 54 students (44.4%) who scored 7/9 (77.8%) or higher on the assessment. There were 40/54 students (74.1%) who scored 6/9 (66.7%). This is below our desired standard of success.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Students performed well on the questions related to the model for risk assessment. They were also able to identify correctly which Miller's strategy for risk management was presented in a given example.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

The questions that were missed by more than 35% of the students were related to distinguishing among the terms toxicology, risk assessment and risk management and among the three control methodologies prevention, mitigation and containment. A large number of students (46.3%) were not able to identify correctly under what risk and benefit conditions does political controversy result (high benefits and high risks).

The most missed question (missed by 61.1%) asked students to identify whether the LD-50 of a chemical found in the environment should be high, medium or low for that chemical to be safest. This is not surprising since the answer seems to be counter-intuitive without an understanding of the definition of LD-50, and how it relates to the safety of chemicals. When asked if the LD-50 (the dose needed to be lethal to 50% of a population) should be high or low for a substance to be "safe," most people answer "low" since one's first instinct is to respond that the dose of a hazardous substance should be low to be "safe". However, the correct answer is that for a substance to be "safer," it should take a very large dose of the substance to be lethal to 50% of the population. We were unable to get most of our students to remember, or to understand, that a low LD-50 substance is the one that is most dangerous since only a small amount would be required to be lethal to 50% of the population. We need to practice with this concept more with our students by increasing the number of specific examples used both in class and on homework assignments.

II. Course Summary and Action Plans Based on Assessment Results

1. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

This course is intended to allow students, especially those who do not have a strong background in math and have avoided science because of bad experiences, or lack of success in earlier science classes, to gain an appreciation of the importance of the natural sciences to their everyday lives. The focus on the

science process is intended to help students evaluate the validity of the scientific information presented in the media, both in print and electronically. The hope is that our students will learn to ask the question, "And how do you know that?", when presented with new information that leads to new conclusions. For the most part, this course is doing this. As the semester proceeds students make new connections to what they have learned previously. They get the opportunity each week to report on a recently published scientific study that is of interest to them personally, so they can see how science affects the world around them. Student surveys at the end of the semester indicate that many students find the risk assessment/risk management unit to be very relevant to their lives.

The fact that we did not meet our standard of success for our outcomes that were assessed using common test questions is a reminder that in addition to reviewing the curriculum and the assessment questions, we need to spend some time during the semester discussing time management and how to approach a take home test. A number of the students, when asked, report that they did not spend a lot of time working on the take home tests, but left them until the day before they were due.

2. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

The results of this course assessment, along with the action plan for improvement will be shared with departmental faculty during the Fall 2016 semester at a regularly scheduled department meeting.

- 3.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Assessment Tool	We will change the master syllabus for this course to show that instead of a departmental final exam, we will assess our student outcomes using common exam questions. We will review the most missed common questions used on this	Since our students are given take home tests during the regular semester, it seems more consistent to use common test questions, and not a department final exam given during the last class, to assess our student outcomes. Additionally, this course is not about having students memorize concept related information but	2016

	<p>assessment and adjust confusing or complicated questions as appropriate. In addition, to make compiling assessment data for each outcome easier, we will group the common questions for each outcome into separate parts. Since questions for outcome #2 appear on each test, we will be sure that all the common questions collected have a student name on them so that we can calculate an overall score for each student on outcome #2, instead of having to report results for outcome #2 on test #1, for outcome #2 on test #2 and outcome #2 on test #3. Each student will be assigned a number, however, so that no student names appear in the course assessment report.</p>	<p>rather about having students able to look up information as needed.</p>	
Course Assignments	<p>Before tests are distributed to students, some</p>	<p>A number of our students need to improve their time</p>	<p>2016</p>

	class time will be devoted to discussing strategies for successfully completing take home tests.	management skills. When asked, some students will admit to trying to answer all the questions on the take home test on the day (or night) before the test is due. To improve student scores, we need to stress the importance of allowing plenty of time to complete each test.	
Course Assignments	We will create additional science article analysis assignments so that students can practice this task related to outcome #1. We will also present more LD-50 examples in class and add more homework questions related to the relationship between the LD-50 of a chemical and its safety.	As seen in the analysis of outcome #1, students need more practice analyzing summaries of science articles. The analysis of outcome #3 showed 61.1% of our students could not identify whether the LD-50 of a chemical found in the environment should be high, medium or low for that chemical to be safest, so more practice is needed to master this concept.	2016
Other: Standard of Success	We will change our standard of success for each outcome to the standard "70% of students will score 70% or higher on the common test questions".	Because of the importance placed on students actually being present each week to take part in class activities, a high percentage of the final course grade is based on attendance and participation. This results in less weight on test scores, so we suspect that a number of students are less	2016

		motivated to perform at their best on tests, which might be reflected in lower scores on the assessment.	
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4. Is there anything that you would like to mention that was not already captured?

5.

III. Attached Files

[Assessment Data, Winter 2016](#)

Faculty/Preparer: Rosemary Rader **Date:** 08/16/2016
Department Chair: Kathleen Butcher **Date:** 09/30/2016
Dean: Kristin Good **Date:** 10/04/2016
Assessment Committee Chair: Michelle Garey **Date:** 11/02/2016