Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Chemistry	101	CEM 101 11/06/2017-Introductory Chemistry
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Physical Sciences	Kathleen Butcher
Date of Last Filed Assessment Report		

I. Assessment Results per Student Learning Outcome

Outcome 1: Recognize the concepts and principles of general chemistry relating to matter and changes, including fundamental measurements, density, stoichiometry, types of chemical reactions, electronic structure, acids/bases, gases, basic atomic theory, chemical bonding, and intermolecular forces at an introductory level.

- Assessment Plan
    - Assessment Tool: Multiple-choice departmental exam.
    - Assessment Date: Winter 2017
    - Course section(s)/other population: All
    - Number students to be assessed: All
    - How the assessment will be scored: answer key
    - Standard of success to be used for this assessment: 70% of the students will score 75% or higher.
    - Who will score and analyze the data: Departmental 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)
		2017

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

# of students enrolled	# of students assessed
82	76

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.

In all but two cases, students had already withdrawn from the course.

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.

There were 4 actual sections included in this assessment: 2 day sections which were F2F sections, and two Saturday sections which were MM.

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

A final assessment exam is given at the end of the course. Each student received an exam containing 20 multiple choice questions. Questions cover units 1-11 and are randomly selected as well as graded via our departmental program. Student scoring is based solely on the number of correct answers divided by 20 (the number of total questions), multiplied by 100, so the final score is the percentage of questions answered correctly.

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 average score for Outcome #1 was 89%, for 89% of students taking this exam. **Standard of success to be used for this assessment:** 70% of the students will score 75% or higher. The standard of success was met for Outcome #1.

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

6 questions from the final assessment exam related directly to Outcome #1. They are included in the attached report. The average percent score was 89%. Students performed far above the standard of success set out for Outcome #1.

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.

As no real weaknesses were found we plan to go forward teaching the course as we have been doing. Though this report does not specifically ask for differences, if any, found in terms of mode of delivery, I do want to address that. We were surprised to note that students in the MM class performed on par with our F2F students. This was unexpected but nice to know. Finally, I do attribute most of this success to a very good course design and an amazing set of full-time and part-time faculty who truly deserve most of the recognition and congratulations for the success of these students in this course.

Outcome 2: Perform laboratory procedures related to science processes and apply basic math concepts, chemical calculations and dimensional analysis to collecting data and calculating results.

- Assessment Plan
    - Assessment Tool: Sample of laboratory reports
    - Assessment Date: Winter 2017
    - Course section(s)/other population: All sections
    - Number students to be assessed: Random sample of 25% of students in each section
    - How the assessment will be scored: departmentally-developed rubric
    - Standard of success to be used for this assessment: 75% of the students will score 6 out of 9 (66% or higher).
    - Who will score and analyze the data: Departmental 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)
		2017

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

# of students enrolled	# of students assessed
82	20

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.

A random sample of 25% of students in each section 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.

Basically, 5 student laboratory reports were randomly selected from each of the 4 sections and assessed.

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

Departmentally-developed rubric - see rubric attached to course syllabus. The four faculty members from the 4 sections of this course sat together and each then randomly assessed 5 reports. The faculty then reviewed each other's assessments. If there was not agreement on scoring, the faculty would discuss it and come to an agreement on the final score.

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
Standard of success to be used for this assessment: 75% of the students will score 6 out of 9 (66% or higher). Happily, 19 out of the 20 reports reviewed scored 66% or higher. Actually, most scored 90 to 100%.

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

More than 90% of the lab reports assessed met or exceeded the standard of success for Outcome #2!

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.

As no real weaknesses were found, we plan to go forward teaching the course as we have been doing. In the case of Outcome #2, there were no differences in terms

of mode of delivery. For all sections of the course, the lab experience remains exactly the same. All students come to the college to and do the same exact labs. I would not expect any significant difference between sections in terms of student success/performance, and in fact, none was found. All students did a great job in terms of both lab performance as well as lab reporting. Finally, I do attribute most of this success to a very good course design and an amazing set of full-time and part-time faculty who truly deserve most of the recognition and congratulations for the success of these students in this course.

Outcome 3: Apply the basic concepts of dimensional analysis, exponential notation and significant figures to calculate stoichiometric quantities, solution concentrations and temperature, pressures and volumes of gases.

- Assessment Plan
    - Assessment Tool: Multiple-choice departmental exam.
    - Assessment Date: Winter 2017
    - Course section(s)/other population: All
    - Number students to be assessed: All
    - How the assessment will be scored: answer key
    - Standard of success to be used for this assessment: 70% of the students will score 75% or higher.
    - Who will score and analyze the data: Departmental 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)
		2017

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

# of students enrolled	# of students assessed
82	76

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.

Basically any students who did not complete the course did not take the exam. A number of these were students who received a W in the course. This exam is required for all students taking the course. It is stated in the syllabus that students must take this exam.

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 assessment covered 4 sections. 2 were F2F sections during the day and 2 were MM.

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

This was a multiple choice test covering material for the entire semester. Questions were included to specifically assess Outcomes #1, #3 and #4. 20 questions made up the test. 6 questions addressed Outcome #1, and 7 questions specifically addressed Outcomes #3 and #4.

For all students who took the test, the number of students who got each of the questions right were counted. Then for each individual question, the total number of students who answered the questions correctly was divided by the total number of students taking the test. That value was then multiplied by 100 to give the percent of students who answered that question correctly.

For each learning outcome, the overall percent of students answering correctly was determined and those values were then compared to the standard of success for each outcome.

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 average score for Outcome #3 was 86% for 89% of students taking this exam.

Standard of success to be used for this assessment: 70% of the students will score 75% or higher.

The standard of success was met for Outcome #3.

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

7 questions from the final assessment exam related directly to Outcome #3. They are included in the attached report. The average score was 86%. Students performed far above the standard of success set out for Outcome #3.

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.

As no real weaknesses were found, we plan to go forward teaching the course as we have been doing. Though this report does not specifically ask for differences, if any, found in terms of mode of delivery, I do want to address that. We were surprised to note that students in the MM class performed on par with our F2F students. This was unexpected but nice to know. Finally, I do attribute most of this success to a very good course design and an amazing set of full-time and part-time faculty who truly deserve most of the recognition and congratulations for the success of these students in this course.

Outcome 4: Classify compounds as ionic, molecular, or acids, and apply nomenclature rules to recognize correct chemical names, formulas and balanced chemical equations.

- Assessment Plan
    - Assessment Tool: Multiple-choice departmental exam
    - Assessment Date: Winter 2017
    - Course section(s)/other population: All
    - Number students to be assessed: All
    - How the assessment will be scored: answer key
    - Standard of success to be used for this assessment: 70% of the students will score 75% or higher.
    - Who will score and analyze the data: Departmental 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)
		2017

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

# of students enrolled	# of students assessed

82	76

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.

Basically any students who did not complete the course did not take the exam. A number of these were students who received a W in the course. This exam is required for all students taking the course. It is stated in the syllabus that students must take this exam.

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 assessment covered 4 sections. 2 were during the day F2F and 2 were MM.

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

This was a multiple choice test covering material for the entire semester. Questions were included to specifically assess outcomes #1, #3 and #4. 20 questions made up the test. 6 questions addressed learning outcome #1, and 7 questions specifically addressed learning outcomes #3 and #4. For all students who took the test, the number of students who got each of the questions right were counted. Then for each individual question, the total number of students who answered the questions correctly was divided by the total number of students taking the test. That value was then multiplied by 100 to give the percent of students who answered that question correctly. For each learning outcome, the overall percent of students answering correctly was determined and those values were then compared to the standard of success for each outcome.

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 average score for Outcome #4 was 90% for 89% of students taking this exam. **Standard of success to be used for this assessment:** 70% of the students will score 75% or higher.

The standard of success was met for Outcome #4.

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

7 questions from the final assessment exam related directly to Outcome #3. They are included in the attached report. The average score was 95%. Students performed far above the standard of success set out for Outcome #4.

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.

As no real weaknesses were found, we plan to go forward teaching the course as we have been doing. Though this report does not specifically ask for differences, if any, found in terms of mode of delivery, I do want to address that. We were surprised to note that students in the MM class performed on par with our F2F students. This was unexpected but nice to know. Finally, I do attribute most of this success to a very good course design and an amazing set of full-time and part-time faculty who truly deserve most of the recognition and congratulations for the success of these students in this course.

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?

Clearly, from the strong results in all areas assessed, this course is doing a very good job of meeting student needs. Not really surprised but very pleased.

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

To be shared with department as well as with the Chemistry 101 part-time instructors.

3. Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
No changes intended.			

4. Is there anything that you would like to mention that was not already captured?

5.

III. Attached Files

final assessment
doc 2
documents for !01
doc 3
doc 4

Faculty/Preparer:	Kathleen Butcher	**Date:**	11/27/2017
Department Chair:	Kathleen Butcher	**Date:**	01/25/2018
Dean:	Kristin Good	**Date:**	01/25/2018
Assessment Committee Chair:	Michelle Garey	**Date:**	02/26/2018