

Course Assessment Report  
Washtenaw Community College

Discipline	Course Number	Title
Chemistry	140	CEM 140 05/23/2021- Organic Biochemistry
College	Division	Department
	Math, Science and Engineering Tech	Chemistry
Faculty Preparer		Breege Concannon
Date of Last Filed Assessment Report		07/08/2019

**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

May 2019

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

At the time this test was given, instructional time focused on metabolism rather than organic chemistry (assessed on the test). Also, the test score was unlikely to affect the students' course grade, so students may not have taken the test seriously.

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

Last time, there were no intended changes apart from writing my own assessment test for the course. Even though the students didn't meet the outcomes I didn't think there was an issue with the course, but rather, the test itself. I wrote a test with parameters more conducive to students' success in that they could take it in parts right after they finished that particular section, and it was on a unit test which counted for a grade in the course. The previous test was worth very few points for the course grade, so again, comparing the assessment reports is not very meaningful. Lastly, this report was written about virtual students and the last was about face-to-face students which I think is also a factor.

**II. Assessment Results per Student Learning Outcome**

Outcome 1: Characterize and name organic compounds, and the reactions they undergo.

- Assessment Plan
  - Assessment Tool: ACS test
  - Assessment Date: Winter 2017
  - Course section(s)/other population: all
  - Number students to be assessed: all
  - How the assessment will be scored: Test will be scored according to ACS standards, it is all multiple-choice.
  - Standard of success to be used for this assessment: 70% of the students must score 70% or higher on the test.
  - Who will score and analyze the data: 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)
2020	2021	

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

# of students enrolled	# of students assessed
116	52

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.

Students from three sections of CEM 140 were assessed using the test created to replace the ACS. Due to instructional challenges related to COVID, deployment of this test was limited. In the future, all sections will be assessed. The number of students that completed the assessments dropped throughout the semester resulting in data 44 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.

Two day sections from Fall 2020 and one day section from Winter 2021 were section.

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

Multiple-choice questions given using Blackboard as unit tests. This was unit 3.

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

Students met the outcome standards just, with 70.6% scoring 70% or higher on the test.

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

A required naming activity was introduced in the lab to assist students with naming concepts. Students seem to need more help with the concept of reactions and the face-to-face activities related to this concept did not translate to the virtual learning environment. This is an area for improvement.

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 did not seem to thrive in the virtual classroom. It seems face-to-face sections, with group activities, works better for these concepts. Additionally, it is also recommended that the ACS test be discontinued in favor of graded unit tests that assess students at multiple points in time and provide insight into how the students are really doing and how well they understand the topics. Finally, it is recommended that all sections are assessed next time.

Outcome 2: Characterize the main classes of biomolecules; carbohydrates, lipids, proteins, and nucleic acids, and their biological functions.

- Assessment Plan
  - Assessment Tool: ACS test
  - Assessment Date: Winter 2017
  - Course section(s)/other population: all
  - Number students to be assessed: all
  - How the assessment will be scored: Test will be scored according to ACS standards, it is all multiple-choice.

- Standard of success to be used for this assessment: 70% of the students must score 70% or higher on the test.
- Who will score and analyze the data: 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)
2020	2021	

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

# of students enrolled	# of students assessed
116	46

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.

Students from three sections of CEM 140 were assessed. At this point, nine students had dropped the class or stopped participating. Also, again, I was not using the ACS test but my unit 4 test for this outcome.

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.

Three CEM 140 sections were assessed in Fall 2020 and Winter 2021.

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

This was assessed using the unit 4 test multiple-choice section given on blackboard.

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  
 On this outcome the standard was met, 93.5% of the students scored 70% or higher, the average score was 85.6%, so at this point in the semester the students are better prepared to take a Blackboard test, they are more used to the content of the class, and to be honest the unprepared students have either dropped or stopped attending at this point. This unit test covers some of my favorite topics so I admit I

spend a bit longer talking about these topics and I hope my enthusiasm rubs off on the students and it looks like it did!

46 out of a starting group of 55 students were left at this point.

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

Students did a good job here on all of the topics. They were able to identify and recognize the various compounds and did a good job classifying lipids and carbohydrates. The area they could use more work on is once again reactions and identifying the products of lipid hydrolysis.

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, students did fine on this outcome. The existing activities seem to have prepared students well. That said, once back in the face-to-face setting, additional instruction to focusing on the hydrolysis of lipids will be added.

Outcome 3: Briefly outline metabolic pathways and their regulation in the body, e.g. citric acid cycle, electron transport chain, glycolysis etc.

- Assessment Plan
  - Assessment Tool: ACS test
  - Assessment Date: Winter 2017
  - Course section(s)/other population: all
  - Number students to be assessed: all
  - How the assessment will be scored: Test will be scored according to ACS standards, it is all multiple-choice.
  - Standard of success to be used for this assessment: 70% of the students must score 70% or higher on the test.
  - Who will score and analyze the data: 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)
2020	2021	

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

# of students enrolled	# of students assessed
116	44

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.

This was the last test in the course and at this point, there were only 44 students out of a starting group of 55 students. There was a high level of drop or non-attendance in this course over these semesters, unusually high, probably due to the virtual nature of the course and the fact that chemistry is hard.

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.

Three sections from Fall 2020 and Winter 2021 were assessed.

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

This was the unit 6 test, which covers metabolism and was the multiple-choice part of the test given on Blackboard.

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 standard was again met here with 95.6% of the students scoring 70% or higher on this outcome. The average score was 85.2% so students did well on this outcome. Again, another student drop the class, so there were only 45 students at this point in the course. This is reflected in the fact that only the successful students took the final test, so only two students did not meet the standard on this outcome. As metabolism is another of my favorite topics and the students are mostly going into health programs, this unit is much more relevant to them and they seem to enjoy it more.

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

Students did a great job here again. Metabolism is more closely related to their career fields and their life in general so they are interested and engaged in these topics.

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 only area for possible improvement here is in identifying the common catabolic pathways and a better understanding of the blood buffer system. I do intend to work on the blood buffer lab to improve student understanding and I will again try to make the common catabolic pathways clear to them.

Outcome 4: Follow the scientific process in the laboratory by properly collecting and recording data, calculating and analyzing results, and drawing conclusions based on the analyses.

- Assessment Plan
    - Assessment Tool: Lab reports
    - Assessment Date: Fall 2020
    - Course section(s)/other population: All
    - Number students to be assessed: All
    - How the assessment will be scored: rubric
    - Standard of success to be used for this assessment: 70% of the students will score a 6 of 9 (67%) or higher
    - Who will score and analyze the data: Chemistry 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)
2020	2021	

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

# of students enrolled	# of students assessed
116	45

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.

Three sections of CEM 140 were assessed, and lab reports done in week 13 of the course were also used. At this point in the course, 10 students had dropped the course or were not in attendance.

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.

Three sections only from Fall 2020 and Winter 2021 were assessed.

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

A rubric based on whether the parts of the lab were completed and correct was used to score the tool. It is attached.

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 standard is 70% of the students must score 6/9 on the rubric and 43/45 achieved this for a percentage of 95.7% of students.

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

Students generally wrote good reports that included all of the components needed, and were also for the most part correct. The conclusion was very well answered in this lab as guided questions for this lab were provided. Also, they did a good job on the calculations which is great as this is not a calculation-based chemistry course, demonstrating good instruction in previous courses. Now even though this lab was virtual, it is still possible to see the students achieved most of the outcome except the collecting/recording of data as the data is provided to them in the virtual environment.

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.

One issue I had was that as this was lab 13 /15, and as the class was virtual, students were not reminded to write a procedure out as in reality they were not doing the lab themselves. They were just getting data from the instructor and watching a video. So instead of students writing a brief procedure out, they would say they performed the experiment as directed or such like. While points were not deducted from the lab grade they received, but a point was taken off on the rubric



as they are supposed to have a brief procedure for the rubric. In a normal semester, we require the brief procedure mostly to ensure that students have read the procedure enough to summarize it so they will know what they are doing in the lab and will be generally safe. Most students did, however, give the procedure as evidenced from the high score on the rubric, 23/45 had full credit on the rubric.

### 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.

Students met the standards using a different tool than the last assessment report. Only one instructor's sections were assessed, and the way the tool is used is very different from the old assessment tool. So, comparing them is like comparing apples and coconuts. Although the questions are similar in both assessments, the structures are drawn in the same way they are drawn in class. The previous test was terrible in that it drew structures in a way that was very difficult to understand, probably due to the software they use to write the tests. Also, the corresponding questions for each outcome are administered right after each outcome is taught, so the concepts are fresh in their minds unlike before, with the assessment at the end of the semester for all of the outcomes.

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?

I was a bit surprised at the low level of outcome 1, but then again it is organic chemistry, and all of this is difficult for students. It is completely different to the general chemistry they had as a prerequisite course, and for many, it takes a while to get into the swing of the course. I was so glad about how well they did on outcomes 2 and 3, as these will be more relevant to them in their health careers and life in general as we talk about topics like vitamins, how we metabolize various foods, what diabetes can do to the body, and how starvation and low carbohydrate diets work.

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

I will talk about this in the fall department meeting with the other faculty, they will be thrilled!

4. Intended Change(s)

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

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

6.
----

### III. Attached Files

[Assessment raw data](#)

[Lab report rubric](#)

**Faculty/Preparer:** Breege Concannon **Date:** 06/03/2021  
**Department Chair:** Tracy Schwab **Date:** 06/03/2021  
**Dean:** Victor Vega **Date:** 06/16/2021  
**Assessment Committee Chair:** Shawn Deron **Date:** 09/15/2021

Course Assessment Report  
Washtenaw Community College

Discipline	Course Number	Title
Chemistry	140	CEM 140 05/17/2019- Organic Biochemistry
Division	Department	Faculty Preparer
Math, Science and Engineering Tech	Physical Sciences	Breege Concannon
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

Winter 2007

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

Students had an average score of 79% on the previous assessment, with 76.22% for outcome 1, 79.84% for outcome 2 and 84.09% for outcome 3. However, this was my first assessment report at WCC, so when I collected the data and wrote the report, I used the average student scores and not the stated 70% of students will score higher than 70%. This time I am using both measures to compare the students.

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

The outcomes were changed on the master syllabus to more closely reflect the course content and the new syllabus forms at the time. Also, the course textbook was changed to a more updated version. As no weaknesses were found, no other action was taken at that time.

**II. Assessment Results per Student Learning Outcome**

Outcome 1: Identify and name the major organic functional groups and their reaction products.

- Assessment Plan

- Assessment Tool: ACS test
- Assessment Date: Winter 2010
- Course section(s)/other population: all
- Number students to be assessed: all
- How the assessment will be scored: Test will be scored according to ACS standards, it is all multiple-choice.
- Standard of success to be used for this assessment: 70% of the students must score 70% or higher on the test.
- Who will score and analyze the data: 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)
2018, 2017	2017	

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

# of students enrolled	# of students assessed
119	71

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.

Multiple sections from different semesters were assessed. The semesters include Fall '18 day and evening sections, Winter and Fall '17. However, the day CEM 140 Fall '17 sections were not assessed, and some students may have stopped coming to class by the last day of lab, when the test is administered.

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 day and evening sections from multiple semesters. In Fall '18, all sections, day and evening, were assessed. In Winter '17, the day sections were assessed. In Fall '17, only the evening section was assessed.

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

The American Chemical Society test was used, which is all multiple choice and scored using scantrons. Comparison to national norms are possible with this test. There are 80 questions total, with 40 for outcome 1.

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

Students scored an average of 68% for outcome 1, with 50.7% of students scoring 70% or higher. This does not meet the outcome's standard of success: 70% must score 70% or higher. However, this is a national exam where averages are in the 50th percentile range, so our students are performing higher than the national norms. In the future, I will use a different assessment test because this one has been used for many years, and I am running out of clean copies of the exam for the students.

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

Students generally did well on naming organic compounds and recognizing different functional groups, as evidenced from the item analysis, which shows that only two students couldn't identify acetone. However, they had issues with isomers, as evidenced from the fact that 48 students got this question wrong. The average score was 68%, which is higher than the national norms, and as the organic part of this course is covered in the first seven weeks of the course, I am actually quite happy with the results obtained. The average score is somewhat lower than the last time the course was assessed, and I have no explanation for this.

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 isomers and molecular formulas are an area of poor performance, I plan on doing more examples in class to emphasize these topics.

Outcome 2: Characterize the main classes of biomolecules; carbohydrates, lipids, proteins, and nucleic acids, and their biological functions.

- Assessment Plan
  - Assessment Tool: ACS test

- Assessment Date: Winter 2010
- Course section(s)/other population: all
- Number students to be assessed: all
- How the assessment will be scored: Test will be scored according to ACS standards, it is all multiple-choice.
- Standard of success to be used for this assessment: 70% of the students must score 70% or higher on the test.
- Who will score and analyze the data: 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)
2018, 2017	2017	

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

# of students enrolled	# of students assessed
119	71

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.

Multiple sections from different semesters were assessed. The semesters include Fall '18 day and evening sections, Winter and Fall '17. However, the day CEM 140 Fall '17 sections were not assessed, and some students may have stopped coming to class by the last day of lab, when the test is administered.

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 day and evening sections from multiple semesters. In Fall '18, all sections, day and evening, were assessed. In Winter '17, the day sections were assessed. In Fall '17, only the evening section was assessed.

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

The American Chemical Society test was used, which is all multiple choice and scored using scantrons. Comparison to national norms are possible with this test. There are 40 multiple choice questions that cover outcomes 2 and 3, with 34

for outcome 2 and 6 (unfortunately) for outcome 3. I did not separate outcomes 2 and 3 from each other.

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

49.3% of students scored 70% or higher on outcome 2 and 3. The average score on this section of the test was 66.58%. Again, this does not meet the outcomes, but once again, the national norms on this test are in the 50th percentile range. Therefore, our students are scoring higher than national norms. As I said before, I am planning to use a new assessment test from now on, as the number of clean copies of the test I have are getting smaller and smaller every time I use the test. Again, the average score is lower than the last assessment report, and I cannot explain this.

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

Again, our students are scoring higher than national norms, with high scores especially in the area of enzymes. Also on questions that had parallels to other courses students were taking, or had taken, they did really well. For example, only seven students didn't identify insulin as being able to reduce blood glucose levels. Some questions that were poorly answered mainly involved reactions of biological compounds, so I may put more emphasis on reactions in future semesters.

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.

I will emphasize biological reactions in future semesters, but I also plan to change the assessment test to an in-house developed one. So in the future, the assessment will more closely match what we do in the course; some of the biochemistry questions on the ACS test are not actually covered in this course.

Outcome 3: Briefly outline metabolic pathways and their regulation in the body, e.g. citric acid cycle, electron transport chain, glycolysis etc.

- Assessment Plan
  - Assessment Tool: ACS test
  - Assessment Date: Winter 2010

- Course section(s)/other population: all
- Number students to be assessed: all
- How the assessment will be scored: Test will be scored according to ACS standards, it is all multiple-choice.
- Standard of success to be used for this assessment: 70% of the students must score 70% or higher on the test.
- Who will score and analyze the data: 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)
2018, 2017	2017	

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

# of students enrolled	# of students assessed
119	71

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.

Multiple sections, from different semesters, were assessed. The semesters include Fall '18 day and evening sections, Winter and Fall '17. However, the day CEM 140 Fall '17 sections were not assessed, and some students may have stopped coming to class by the last day of lab, when the test is administered.

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 day and evening sections from multiple semesters. In Fall '18, all sections, day and evening, were assessed. In Winter '17, the day sections were assessed. In Fall '17, only the evening section was assessed.

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

The American Chemical Society test was used, which is all multiple choice and scored using scantrons. Comparison to national norms are possible with this test. There are 40 multiple choice questions that cover outcomes 2 and 3, with 34 for outcome 2 and 6 (unfortunately) for outcome 3. I did not separate outcomes 2 and 3 from each other.



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: <u>No</u>
49.3% of students scored 70% or higher on outcome 2 and 3. The average score on this section of the test was 66.58%. Again, this does not meet the outcomes, but once again, the national norms on this test are in the 50th percentile range. Therefore, our students are scoring higher than national norms. As I said before, I am planning to use a new assessment test from now on, as the number of clean copies of the test I have are getting smaller and smaller every time I use the test. Again, the average score is lower than the last assessment report, and I cannot explain this.

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

Again, our students are scoring higher than national norms, with high scores especially in the area of enzymes. Also on questions that had parallels to other courses students were taking or had taken they did really well, for example only seven students didn't identify insulin as being able to reduce blood glucose levels. Some questions that were poorly answered mainly involved reactions of biological compounds, so I may put more emphasis on reactions in future semesters.
--

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.

I will emphasize biological reactions in future semesters, but I also plan to change the assessment test to an in-house developed one. So in future, the assessment will more closely match what we do in the course; some of the biochemistry questions on the ACS test are not actually covered in this course.
---

### 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.

There were no changes previously, apart from updating the course outcomes to align with the new syllabus forms at the time. Also, the change in the textbook was to respond to student concerns and college concerns about the cost of books. In the intervening years, OERs have become more available.
--

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?

I am happy with how our students are performing. Relative to national norms, our students are consistently doing well on this test. I am not surprised the students are not performing at a really high level, as the test is cumulative. Since the course is 15 weeks long, it covers an enormous amount of material, and, honestly, the students will never use the material again in their professional lives. They understand they need to do well in the course and get a good grade so they can move on, but this is the last chemistry course they will ever take. The last part of the course, which we have barely three weeks to cover, is probably the only part that will be relevant to their future careers. Also, this test was written in 1995, so it is 24 years old. At times, the format of the questions is confusing for the students, as are some of the drawings of the structures. I was holding on to this test as it is a nationally recognized exam, and I was somehow afraid if I wrote my own test I would make it too easy, or I wouldn't be getting data I can compare to other colleges. However, I now realize that I have to write my own exam, so that the format is easier for the students to understand and also so that the structures I use are the same as the ones they have seen all semester in class. The ACS test is in a booklet comprising multiple tests, so when our students take it they only take a small subset of the tests, which is confusing. As I previously stated, I only have a limited number of clean copies left now, and the test is actually fully available online if students look for it.

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

At a department meeting in the fall.

4. Intended Change(s)

Intended Change	Description of the change		Rationale	Implementation Date
Assessment Tool	Assessment Tool	I plan to write my own assessment test and administer it every semester	The ACS test does not separate out the outcomes very well: there are 40 questions for outcome 1, 34 for outcome 2, and only 6 for outcome	2019

	<p>to get data every semester the course is taught. The ACS test is nice, but at this point I have been using the same test for the past 16 years, and it was used prior to this time also. As some of the questions are not even relevant to my course, and also the format of the test is confusing having my own test will be a better option, and I won't have to worry about students writing on the test and destroying</p>	<p>3. So this is an issue. Also the format of the test is confusing because the students only take parts of the tests that are in the booklet we use. Many copies of the test have become defaced over the years, and I know the test is available online to the students, as it is old. Some of the formatting of questions in the test is also outdated and not the same as the format I use in class, so my own test will more closely match the format the students are used to.</p>	
--	---	--	--

	it. I can just print more copies off!		
--	--	--	--

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

6.
----

### III. Attached Files

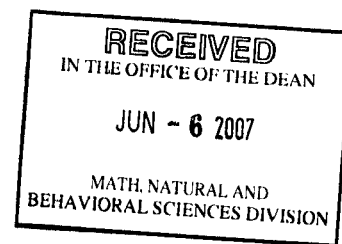
[Raw scores](#)

**Faculty/Preparer:** Breege Concannon **Date:** 05/20/2019  
**Department Chair:** Suzanne Albach **Date:** 05/21/2019  
**Dean:** Kimberly Jones **Date:** 06/05/2019  
**Assessment Committee Chair:** Shawn Deron **Date:** 07/08/2019

**COURSE ASSESSMENT REPORT**

**I. Background Information**

1. Course assessed:  
 Course Discipline Code and Number: CEM 140  
 Course Title: Organic and Biochemistry  
 Division/Department Codes: PHY



2. Semester assessment was conducted (check one):  
 Fall 2006  
 Winter 20\_07\_  
 Spring/Summer 20\_\_

3. Assessment tool(s) used: check all that apply.  
 Portfolio  
 Standardized test  
 Other external certification/licensure exam (specify):  
 Survey  
 Prompt  
 Departmental exam  
 Capstone experience (specify):  
 Other (specify):

4. Have these tools been used before?  
 Yes  
 No

If yes, have the tools been altered since its last administration? If so, briefly describe changes made.  
 No

5. Indicate the number of students assessed/total number of students enrolled in the course.  
 73/73

6. Describe how students were selected for the assessment.  
 All sections were assessed

**II. Results**

1. Briefly describe the changes that were implemented in the course as a result of the previous assessment.  
 No changes: This is the first assessment report for this course.
2. State each outcome (verbatim) from the master syllabus for the course that was assessed.  
 Outcomes:
  - a. Identify and name the major organic functional groups and their reaction products.
  - b. Characterize the main biomolecules, carbohydrates, lipids, proteins, and nucleic acids, and their biological functions.
  - c. Briefly outline metabolic pathways and their regulation in the body, e.g. citric acid cycle, electron transport chain, glycolysis etc.
3. Briefly describe assessment results based on data collected during the course assessment, demonstrating the extent to which students are achieving each of the learning outcomes listed above. *Please attach a summary of the data collected.*

The test given was an American Chemical Society standardized test consisting of 80 multiple-choice questions, split into 40 organic and 40 biochemistry. Tests were run on scantrons and average score for the various sections are recorded below, with an average overall of 79.09%

Section 1& 2	76.22%
Section 3	79.84%
Section 4	84.09%

**COURSE ASSESSMENT REPORT**

4. For each outcome assessed, indicate the standard of success used, and the percentage of students who achieved that level of success. *Please attach the rubric/scoring guide used for the assessment.*  
 70% of students must score 70% or above on the ACS test. For this test 58/73 or 79.5% of students had a score above 70%.  
 Results for each of the three outcomes are summarized here and detailed on the excel spreadsheet attached.  
 Each question was categorized as to outcome and scores totaled for each outcome. The scores were averaged for all sections.  
 Outcome 1: 77.53% success  
 Outcome 2: 79.5% success  
 Outcome 3: 73.17% success

5. Describe the areas of strength and weakness in students' achievement of the learning outcomes shown in assessment results.

Strengths: All of the outcomes were met or exceeded.

Weaknesses: N/A

**III. Changes influenced by assessment results**

1. If weaknesses were found (see above) or students did not meet expectations, describe the action that will be taken to address these weaknesses.

No weaknesses found in student mastery of the outcomes.

2. Identify intended changes that will be instituted based on results of this assessment activity (check all that apply). Please describe changes and give rationale for change.

- a.  Outcomes/Assessments on the Master Syllabus

Change/rationale: The course syllabus has not yet been updated, and the objectives given are those that will appear in the new syllabus as of Fall 2007.

- b.  Objectives/Evaluation on the Master Syllabus

Change/rationale: New syllabus

- c.  Course pre-requisites on the Master Syllabus

Change/rationale:

- d.  1<sup>st</sup> Day Handouts

Change/rationale:

- e.  Course assignments

Change/rationale:

- f.  Course materials (check all that apply)

Textbook

Handouts

Other:

- g.  Instructional methods

Change/rationale:

- h.  Individual lessons & activities

Change/rationale:

3. What is the timeline for implementing these actions? New syllabus this Fall 2007

**IV. Future plans**

1. Describe the extent to which the assessment tools used were effective in measuring student achievement of learning outcomes for this course.

Please return completed form to the Office of Curriculum & Assessment, SC 247.

**COURSE ASSESSMENT REPORT**

The ACS test is an effective tool, and data can be compared to national norms if desired.

2. If the assessment tools were not effective, describe the changes that will be made for future assessments. N/A

3. Which outcomes from the master syllabus have been addressed in this report?

All X Selected:

If "All", provide the report date for the next full review: Winter 2010

If "Selected", provide the report date for remaining outcomes:

**Submitted by:**

Name: Breege Concaran / [Signature] Date: June 6<sup>th</sup> 2007  
Print/Signature

Department Chair: Rob Hagedorn / [Signature] Date: June 6<sup>th</sup> 2007  
Print/Signature

Dean: Merby Showalter / [Signature] Date: 6-11-07  
Print/Signature

*logged 6/7/07 sj*