Fall 2014 Assessment Report
Data Analysis
Physical and Biological Sciences Department
Biology

1. Which program outcomes were you assessing this year? (Please include the full text of the outcome along with any numbering system.)

Outcomes:
1. Explain scientific vocabulary and knowledge
3. Explain and demonstrate the scientific method and its applications
4. Demonstrate proficiency in laboratory skills, including familiarity with the use of instrumentation and analytic methods commonly used in environmental research

2. How did you assess each outcome? Please explain how this was an effective measure of the specified outcome.

Outcome 1: BIOL 110 (fall and spring) and BIOL/ENVS 490 exams (fall and spring), BIOL/ENVS 490 Student Survey (fall and spring), BIOL 290L (fall only) formal Laboratory Report
   - Each assessment tool is a content-based measure of specific vocabulary, terms, and details of scientific concepts

Outcome 3: BIOL 110L and BIOL 112L formal lab reports (fall and spring), and BIOL/CHEM/ENVS 395 Research Paper (Methods)
   - Each assessment tool requires students to prepare a detailed description of methods development for a scientific experiment, and the use of proper sampling, replication, experimental design, etc. can be judged based on these descriptions.

Outcome 4: BIOL 110L (fall and spring), BIOL 342L (spring), and BIOL 420L (fall only) Demonstration of Proficiency in Laboratory Skills
   - Each assessment tool is a multi-layered assessment of skill combinations needed for a basic science laboratory exercise (i.e. safety, record keeping, learning new techniques, mastering previously learned techniques, etc)

3. What were the results of these assessments? Feel free to use tables or graphs as appropriate.

Outcome 1
- BIOL 110, where a large percentage of students are not meeting or exceeding expectations for Outcome 1. This is not surprising as this is typically the first core course ENVS or BIOL majors take, and it introduces many new concepts. It is of note that performance by students at various venues was similar.
- BIOL 290L, laboratory reports from this course reflected well that almost all students were meeting or exceeding expectations. This was seen in all venues assessed.
- BIOL 490, students met or exceeded expectations for this assessment.

Outcome 3
- BIOL 395, where a large percentage of students are not meeting expectations for Outcome 3. This may indicate that, although students do well meeting this expectation in lower level courses where lab experiments may be simpler in design, they struggle to apply concepts related to the Scientific Method in larger more complex contexts.
- BIOL 110L and 112L, assessment of students in both laboratories reflected their novice status in the discipline where the majority met expectations with few exceeding expectation.

Outcome 4
- BIOL 110L and BIOL 420L, the skills assessment reflected the student’s ability levels. The majority of 110L students met expectation though a substantial fraction did not meet expectation. Though not in the current reports the data for BIOL 420L was retrieved from the instructor’s records and all students either met or exceeded expectations for the skills portion of the laboratory.

4. **Do you plan to change any of your course outcomes based on these assessments? Please explain.**
   Changing course outcomes would be premature and incomplete at this time as data gathering continues into the spring semester of 2015. After the full review of data by the department changes will be discussed. Changes will then be implemented in the next assessment cycle.

5. **Did your assessment opportunities effectively assess your specified outcomes? Please explain.**
   In general terms the assessment opportunities were effective in assessing our outcomes. There is however confusion from the adoption of the rubrics and having multiple entries for each rubric being displayed by the classes on the output portion of the reports. It also appears the reports have confused the assessment from Outcome 3 & 4 in several of the reports from BIOL 110L. This could be an artifact from the initial difficulties faced last semester in the implementation of the rubrics by instructors and the subsequent rebuilding of the rubrics into D2L. There appears to be difficulty in retrieving all data as the results for BIOL 420L are missing from the reports for Outcome 3.

6. **To improve student learning, what actions do you intend to take based on these data? Please explain.**
   As mentioned earlier data will be evaluated as a whole with the spring 2015 data by the Department. Potential changes to the assessment plan and rubrics will be discussed then.
Chemistry

1. Which program outcomes were you assessing this year? (Please include the full text of the outcome along with any numbering system.)

   1. Critically analyze scientific questions
   2. Apply mathematical skills in a scientific context
   6. Use key chemical principles to solve chemical problems

2. How did you assess each outcome? Please explain how this was an effective measure of the specified outcome.

   ACS exams and 306 Laboratory Report.

3. What were the results of these assessments? Feel free to use tables or graphs as appropriate.

   **CHEM 112**

<table>
<thead>
<tr>
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<th>14-01 A</th>
</tr>
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<tbody>
<tr>
<td>Enrollment</td>
<td>13</td>
</tr>
<tr>
<td>CHEM Exam Reporting (ACS Exam Score)</td>
<td>n 14</td>
</tr>
<tr>
<td>Above one standard deviation of the national mean</td>
<td>7%</td>
</tr>
<tr>
<td>Within one standard deviation of the national mean</td>
<td>71%</td>
</tr>
<tr>
<td>Below one standard deviation of the national mean</td>
<td>21%</td>
</tr>
</tbody>
</table>

   The number of students achieving within or above one standard deviation of the national norm was one percent below the 80% goal. If you consider the number of students that took the final with a course grade of D or F and removed them from the results, we probably achieved our goal.

   **CHEM 110**

<table>
<thead>
<tr>
<th>Summary</th>
<th>14-01 A</th>
<th>14-01 B</th>
<th>14-52 A</th>
</tr>
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<td>Sections participating in Assessment</td>
<td>14-01 A</td>
<td>14-01 B</td>
<td>14-52 A</td>
</tr>
<tr>
<td>Enrollment</td>
<td>12</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>CHEM Exam Reporting (ACS Exam Score)</td>
<td>X *</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The results are a bit muddled from the report, and enrollment numbers do not seem to match the number of students in the class. The number of students achieving within or above one standard deviation of the national norm was below the 80% goal. If you consider the number of students that took the final with a course grade of D or F and removed them from the results, we probably achieved our goal.

I added a comment to my entry as to whether the student had a D or F at the time of the final in the reporting rubric. Maybe we can put a check box to indicate if the student is at the D or F level and capture that in our data.
The provided data summarizes the results from the data.

Analysis of the data is consistent with contemporary chemical knowledge. (Discussion)  

The analysis of the data provides a clear context for the significance of the results and if appropriate a connection to the primary literature. (Discussion)

Appropriate calculations for analysis of data are completed.

Laboratory report is well written, using appropriate scientific English. Only primary sources

<table>
<thead>
<tr>
<th></th>
<th>Strong</th>
<th>Needs Work</th>
<th>Weak</th>
</tr>
</thead>
<tbody>
<tr>
<td>The provided data summarizes the results from the data.</td>
<td>63%</td>
<td>38%</td>
<td>0%</td>
</tr>
<tr>
<td>Analysis of the data is consistent with contemporary chemical knowledge. (Discussion)</td>
<td>63%</td>
<td>38%</td>
<td>0%</td>
</tr>
<tr>
<td>The analysis of the data provides a clear context for the significance of the results and if appropriate a connection to the primary literature. (Discussion)</td>
<td>25%</td>
<td>38%</td>
<td>38%</td>
</tr>
<tr>
<td>Appropriate calculations for analysis of data are completed.</td>
<td>63%</td>
<td>38%</td>
<td>0%</td>
</tr>
<tr>
<td>Laboratory report is well written, using appropriate scientific English. Only primary sources</td>
<td>25%</td>
<td>50%</td>
<td>25%</td>
</tr>
</tbody>
</table>

These data are fairly mixed. While it is encouraging that the majority to students are able to summarize and provide some analysis of the context for this lab, it is unfortunate that these students did not then connect that to why their data mattered. Additionally, the level of student writing was a source of concern. One issue with this data is that students were not consistently in the same category- meaning that the aggregate percentages do not indicate where individuals scored. Given that these categories are not equally weighted in the rubric used to evaluate and score student work the resulting average for this assessment was 64.4% with 2 students exceeding expectations, 3 meeting expectations and 3 not meeting expectations.

Most students fell within the “Needs Work” to “Strong”, with a small percentage in the “Weak” category.

4. **Do you plan to change any of your course outcomes based on these assessments? Please explain.**
   Not at this time. Not enough data to note trends.

5. **Did your assessment opportunities effectively assess your specified outcomes? Please explain.**
   Yes, the ACS exams do assesses these outcomes in the aggregate. This is a good objective assessment of these outcomes.
   The evaluation of the laboratory is more subjective, but gives a good picture of areas that need work for this particular class.

6. **To improve student learning, what actions do you intend to take based on these data? Please explain.**
   Nothing at this time. We will discuss this more as a group at the end of the year and collect more data in the following years. This summer we will get together to design some tracking questions for CHEM 110 and 112 to be used in the future classes. This is one semester of results.
Environmental Sciences

1. Which program outcomes were you assessing this year? (Please include the full text of the outcome along with any numbering system.)

Outcomes:
1. Explain scientific vocabulary and knowledge
3. Explain and demonstrate the scientific method and its applications
4. Demonstrate proficiency in laboratory skills, including familiarity with the use of instrumentation and analytic methods commonly used in environmental research

2. How did you assess each outcome? Please explain how this was an effective measure of the specified outcome.

Outcome 1: BIOL 110 (fall and spring), ENVS 251 (fall only), and BIOL/ENVS 490 exams (fall and spring), BIOL/ENVS 490 Student Survey (fall and spring)
- Each assessment tool is a content-based measure of specific vocabulary, terms, and details of scientific concepts

Outcome 3: BIOL 110L and BIOL 112L formal lab reports (fall and spring), and BIOL/CHEM/ENVS 395 Research Paper (Methods)
- Each assessment tool requires students to prepare a detailed description of methods development for a scientific experiment, and the use of proper sampling, replication, experimental design, etc. can be judged based on these descriptions.

Outcome 4: BIOL 110L (fall and spring), BIOL 112L (fall and spring), and BIOL/ENVS 343 (fall only) Demonstration of Proficiency in Laboratory Skills
- Each assessment tool is a multi-layered assessment of skill combinations needed for a basic science laboratory exercise (i.e. safety, record keeping, learning new techniques, mastering previously learned techniques, etc)

3. What were the results of these assessments? Feel free to use tables or graphs as appropriate.

With a few expectations, students are meeting or exceeding expectations. The exceptions include
- BIOL 110, where a large percentage of students are not meeting or exceeding expectations for Outcome 1. This is not surprising as this is typically the first core course ENVS or BIOL majors take, and it introduces many new concepts
- BIOL 395, where a large percentage of students are not meeting expectations for Outcome 3. This may indicate that, although students do well meeting this expectation in lower level courses where lab experiments may be simpler in design, they struggle to apply concepts related to the Scientific Method in larger more complex contexts.

4. Do you plan to change any of your course outcomes based on these assessments? Please explain.
Not at this time. We will evaluate the full year in June, and make discuss this question. However, we are currently satisfied with the outcomes being assessed.

5. **Did your assessment opportunities effectively assess your specified outcomes? Please explain.**

Yes, for the most part. We will continue to improve these as time goes on. For example, assessing Outcome 4 is a complex process and it is possible that the rubrics for this Outcome can be improved or better defined.

6. **To improve student learning, what actions do you intend to take based on these data? Please explain.**

We hesitate to make changes based on only part of the assessment for the year. Our plan is to evaluate and full year in June, and discuss potential actions as a Department.
Spring 2015 Assessment Report
Data Analysis
Physical and Biological Sciences Department
Biology

1. Which program outcomes were you assessing this year? (Please include the full text of the outcome along with any numbering system.)

Outcomes:
1. Explain scientific vocabulary and knowledge
3. Explain and demonstrate the scientific method and its applications
4. Demonstrate proficiency in laboratory skills, including familiarity with the use of instrumentation and analytic methods commonly used in environmental research

2. How did you assess each outcome? Please explain how this was an effective measure of the specified outcome.

Outcome 1: BIOL 110 (fall and spring) and BIOL/ENVS 490 exams (fall and spring), BIOL/ENVS 490 Student Survey (fall and spring), BIOL 290L (fall only) formal Laboratory Report
- Each assessment tool is a content-based measure of specific vocabulary, terms, and details of scientific concepts

Outcome 3: BIOL 110L and BIOL 112L formal lab reports (fall and spring), and BIOL/CHEM/ENVS 395 Research Paper (Methods)
- Each assessment tool requires students to prepare a detailed description of methods development for a scientific experiment, and the use of proper sampling, replication, experimental design, etc. can be judged based on these descriptions.

Outcome 4: BIOL 110L (fall and spring), BIOL 342L (spring), and BIOL 420L (fall only) Demonstration of Proficiency in Laboratory Skills
- Each assessment tool is a multi-layered assessment of skill combinations needed for a basic science laboratory exercise (i.e. safety, record keeping, learning new techniques, mastering previously learned techniques, etc)

3. What were the results of these assessments? Feel free to use tables or graphs as appropriate.

Outcome 1
- In BIOL 110, a large percentage of students are meeting or exceeding expectations for Outcome 1 across all venues (83% of 149 students). Day campus (80% of 30 students), nationwide (80% of 20 students), evening (79% of 42 students), and online (88% of 57 students) had very similar breakdown for students ability to explain scientific vocabulary and knowledge. It is encouraging to note the consistency between venues. Further reporting with in the sub-learning outcomes will be encouraged at all venues where applicable.

- In BIOL 490, 68% out of 19 students met or exceeded the national mean of the Biology MFT with 32% not meeting this benchmark as seen in Figure 1 below. 100% of students in their Self-reporting Exit Survey met or exceeded expectations for all venues. This would seem to indicate that students feel well prepared in their education from Columbia College. Comparison of MFT data by venue as seen in Figure 2 below does show that the Day campus had a higher number
(88%) of individuals meeting or exceeding expectations than the evening campus (55%), although the sample size is limited for sets.

**Figure 1**

Comparison of actual MFT performance with perceived preparedness self-reported by students

**Figure 2**

Comparison of MFT performance by venue

**Outcome 3**
Assessment of a formal lab report was done in both BIOL 110L and BIOL 112L laboratory courses. A comparison of data for BIOL 110L is shown in Figure 3. In general, the majority of students met or
exceeded expectations and there was similarity of results between venues. The assessment tool for this Outcome was a comprehensive lab report based on a lab of the instructor’s choice. The assessment results indicated that most students are able to produce an acceptable scientific lab report. This Outcome is also assessed in BIOL/ CHEM/ ENVS 395 via a comprehensive Research Paper, and specifically the Methods section based on the collection, analysis and interpretation of original data. The sample size is smaller, but again most students met or exceeded expectations. The standard for meeting and exceeding expectations are higher for this course, and so results.

Figure 3

![Bar graph showing comparison of assessment results across venues.](image)

Outcome 4

- For BIOL 110L, BIOL 112L, and BIOL 342L, the analysis of all venues for laboratory safety and procedures showed only three students out of 113 did not meet or exceed expectation. Although we would like to see this value be 100%, this high passage rate is to be expected of any student taking a laboratory course. BIOL 110L Day 61% of students met or exceeded expectations while the evening had 98% meeting or exceeding expectations for demonstration of laboratory skills. Without knowledge of the evaluation tool in the evening section it is difficult to make a comparison between its results and the day results for this outcome. This further highlights the need to better record assessment opportunities in D2L as well as communicate expectations to adjuncts from the department. One section of 112L was taught in all venues in the spring where 92% of day students met or exceeded expectations. 88 % of 32 BIOL 342L students met or exceeded expectations at all venues.

4. Do you plan to change any of your course outcomes based on these assessments? Please explain.

Currently there are no plans to change the course outcomes based on the results from both the Fall and Spring data analysis for Biology Outcomes 1, 3, and 4. Although further refinement of D2L modules and instruction to adjunct professors changes may occur as deemed necessary by the full department.
All core courses currently in the assessment sequence have had their measurable learning objectives revised and converted to course learning objectives as of Spring 2015. Clarification of expectation and language should assist both the instructor and student of the expectations and performance indicators of the course.

5. **Did your assessment opportunities effectively assess your specified outcomes? Please explain.**

In general terms the assessment opportunities were effective in assessing our outcomes. There is however confusion from the adoption of the rubrics and having multiple entries for each rubric being displayed by the classes on the output portion of the reports from the various venues.

Outcome 1 as measured in the fall and spring sections of BIOL 110 gave a consistent picture that students are, for the majority, meeting or exceeding the assessment benchmark. However the number that did not meet the benchmark particularly in the day sections of the fall could be of concern, but could be due to differences between individual instructors and the initial norming of the performance indicators of the assessment rubric. The use of the MFT as a performance indicator provided data of the overall knowledge of our students as measured in Outcome 1. A review of individual students from the day program and their course plan while at Columbia College showed a strong performance correlation in the MFT sub-categories of cell, molecular biology and genetics, organismal, and population/ecology/evolution. On average for both the fall and spring, Columbia College students scored within the national average on the MFT composite.

Outcome 3 and Outcome 4 were consistent in the results for student ability levels in regard to the course being assessed. Improvements in the spring data versus fall data collection could be attributed to improvements in the implementation of assessment by instructors and not necessarily the abilities of the students.

6. **To improve student learning, what actions do you intend to take based on these data? Please explain.**

*Improve communication with other venues*

- One issue with the spring data is that it is incomplete. Assessment was not always completed, and this most often occurred in venues other that the day campus. For example for the Outcome 1 Assessment rubric, 1 out of 2 Nationwide sections and 2 out of 5 online sections did not participate in assessment. In other words, almost 28% of assessment data for this course and Outcome was missing. For Outcome 4 in BIOL 110L, the Lake Campus did not participate in assessment. We have no way of knowing the reasons for this, but are interested in knowing whether part of the reason is a lack of clear understanding of the assessment process. If so, we can improve overall participation next year.

*Work on standardizing assessment via better rubrics*
• Where possible, we would like to provide clearer grading rubrics that can be used across courses. For example, we have a simple grading rubric for laboratory reports that could be suitable for BIOL 110L and BIOL 112L, and a separate one for BIOL 395 that could be implemented in both Day and Evening courses. Looking at the data for the assessment of Outcome 3 in BIOL 110L, we wondered why so many study in the Evening section received an “exceeds expectations” in comparison to students in the Day sections. This may be a reflection of the fact that the rubrics are not applied in the same way.

Changes to BIOL 112 and BIOL 112L

• Based on MFT data from the last several years, including Fall 2014 assessment data, the department proposed changes to the content covered in BIOL 112, as well as strengthening BIOL 112L and making this lab more closely aligned with BIOL 110L.

Pre-requisite Changes

• Currently students are not required to take BIOL 112 and BIOL 112L as pre-requisites to other courses in the Biology program. This is presently under revision to have students take what is designed to be a beginning course in the initial semesters at the college and having more of the intermediate courses such as BIOL 290/290L (Cell Biology) having the courses as a pre-requisite.
1. Which program outcomes were you assessing this semester? (Please include the full text of the outcome along with any numbering system.)

This semester the following program outcomes were assessed:
1. Critically analyze scientific questions
2. Apply mathematical skills in a scientific context
6. Use key chemical principles to solve chemical problems

2. How did you assess each outcome? Please explain how this was an effective measure of the specified outcome.

ACS exams in general chemistry I and II (CHEM 110 and CHEM 112), Organic Chemistry II (CHEM 312)

3. What were the results of these assessments? Feel free to use tables or graphs as appropriate.

CHEM 110:

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</tr>
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CHEM 112:

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<tr>
<td>ACS General Chemistry Full Year Exam</td>
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<tr>
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<td>7.69%</td>
<td>5</td>
<td>29.41%</td>
</tr>
<tr>
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<td>92.31%</td>
<td>7</td>
<td>41.18%</td>
</tr>
<tr>
<td>Above one standard deviation of the national mean</td>
<td>5</td>
<td>29.41%</td>
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CHEM 312:

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<td>ACS Organic Final Exam Full Year</td>
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<td>Below one standard deviation of the national mean</td>
<td>2</td>
</tr>
<tr>
<td>Within one standard deviation of the national mean</td>
<td>14</td>
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</table>

4. **Do you plan to change any of your course outcomes based on these assessments? Please explain.**

At this time these data do not indicate that we should change our course outcomes, however we will be changing our assessment approach in the future (see below).

5. **Did your assessment opportunities effectively assess your specified outcomes? Please explain.**

No, we do not have sufficient data to draw conclusions about the specified outcomes. While this test provides us significant information about the overall performance (the majority of the students were within or above one standard deviation of the national mean), we do not have enough specific data tied to each of the program outcomes assessed this semester.

6. **To improve student learning, what actions do you intend to take based on these data? Please explain.**

Based the data collected, we are satisfied that the students in these classes have achieved the desired academic progress. However, in order to better understand how specific outcomes can be improved, we will modify our assessment strategy to correlate specific portions of the exam with each of the program outcomes to provide additional, actionable information in future semesters.

Throughout our courses we are looking at ways of formalizing the formative assessments that we have been providing to our students and we have revised our assessment plan for these courses to reflect these changes. We will also be correlating these formative assessments with the categories of questions available in the ACS exams (below).

In the general chemistry sequence we be refining our evaluation of the American Chemical Society examination to provide an analysis of the following general sections based on the students’ performance in the categories below. This will allow us to more specifically address student learning in these areas.

CHEM 110:
- Atomic Structure
- Molecular Structure and Bonding
- Stoichiometry
- States of Matter / Solutions
- Energetics
Descriptive Chemistry / Periodicity
Laboratory Chemistry

CHEM 112:
Atomic Structure
Molecular Structure and Bonding
Stoichiometry
States of Matter / Solutions
Energetics
Dynamics
Equilibrium
Electrochemistry / Redox
Descriptive Chemistry / Periodicity
Laboratory Chemistry
Environmental Sciences

1. Which program outcomes were you assessing this semester? (Please include the full text of the outcome along with any numbering system.)

Outcome 1. Explain scientific vocabulary and knowledge
Outcome 3. Explain and demonstrate the scientific method and its applications
Outcome 4. Demonstrate proficiency in laboratory skills, including familiarity with the use of instrumentation and analytic methods commonly used in environmental research

2. How did you assess each outcome? Please explain how this was an effective measure of the specified outcome.

Outcome 1:
BIOL 110 Comprehensive Final Exam
BIOL/ENVS 490 MFT
BIOL/ENVS 490 Student Exit Survey
Each assessment tool is a content-based measure of specific vocabulary, terms, and details of scientific concepts

Outcome 3:
BIOL 110L formal lab report
BIOL 112L formal lab report
BIOL/CHEM/ENVS 395 Research Paper (Methods)
Each assessment tool requires students to prepare a detailed description of methods development for a scientific experiment, and the use of proper sampling, replication, experimental design, etc. can be judged based on these descriptions.

Outcome 4:
BIOL 110L Demonstration of Proficiency in Laboratory Skills
BIOL 112L Demonstration of Proficiency in Laboratory Skills
Each assessment tool is a multi-layered assessment of skill combinations needed for a basic science laboratory exercise (i.e. safety, record keeping, learning new techniques, mastering previously learned techniques, etc)

3. What were the results of these assessments? Feel free to use tables or graphs as appropriate.

Outcome 1:
- BIOL 110, where a large percentage of students are meeting or exceeding expectations for Outcome 1 across all venues (83% of 149 students). Day campus (80% of 30 students), nationwide (80% of 20 students), evening (79% of 42 students), and online (88% of 57 students) had very similar breakdown for students ability to explain scientific vocabulary and knowledge. It is encouraging to note the consistency between venues. Further reporting with in the sub-learning outcomes will be encouraged at all venues where applicable.
- BIOL 490, 68% out of 19 students met or exceeded the national mean of the Biology MFT with 32% not meeting this benchmark as seen in Figure 1 below. 100% students in their Self-reporting Exit Survey met or exceeded expectations for all venues. This would seem to indicate that students feel well prepared in their education from Columbia College. Comparison of MFT data by venue as seen in Figure 2 below does show that the Day campus had a higher number (88%) of individuals meeting or exceeding expectations than the evening campus (55%). Though the sample size is limited for sets
Outcome 3:
- Assessment of a formal lab report was done in both BIOL 110L and BIOL 112L laboratory courses. A comparison of data for BIOL 110L is shown in Figure 3. In general, the majority of students met or exceeded expectations and there was similarity of results between venues. The assessment tool for this Outcome was a comprehensive lab report based on a lab of the instructor’s choice. The assessment results indicated that most students are able to produce an acceptable scientific lab report. This Outcome is also assessed in BIOL/CHEM/ENVS 395 via a
comprehensive Research Paper, and specifically the Methods section based on the collection, analysis and interpretation of original data. The sample size is smaller, but again most students met or exceeded expectations. The standard for meeting and exceeding expectations are higher for this course, and so results.

Figure 3. Outcome 3: Explain and demonstrate the scientific method and its applications. BIOL 110L Comparison of assessment results across venues.

**Outcome 4**
- BIOL 110L, BIOL 112L, and BIOL 342L. In the analysis of all venues for laboratory safety and procedures only three students out of 113 did not meet or exceed expectation. Though we would like to see this value be 100% this high passage rate is to be expected of any student taking a laboratory course. BIOL 110L Day 61% of students met or exceeded expectations while the evening had 98% meeting or exceeding expectations for demonstration of laboratory skills. Without knowledge of the evaluation tool in the evening section it is difficult to make a comparison between its results and the day results for this outcome. This further highlights the need to better record assessment opportunities in D2L as well as communicate expectations to adjuncts from the department. One section of 112L was taught in all venues in the spring where 92% of day students met or exceeded expectations. 88 % of 32 BIOL 342L students met or exceeded expectations at all venues.

4. **Do you plan to change any of your course outcomes based on these assessments? Please explain.**
   Currently there are no plans to change the course outcomes based on the results from both the Fall and Spring data analysis for Biology Outcomes 1, 3, and 4. Although in the further refinement of D2L modules and instruction to adjunct professors changes may occur as deemed necessary by the full department.
   All core courses currently in the assessment sequence have had their measurable learning objectives revised and converted to course learning objectives as of Spring 2015. Clarification of expectation and language should assist both the instructor and student of the expectations and performance indicators of the course.

5. **Did your assessment opportunities effectively assess your specified outcomes? Please explain.**
In general terms the assessment opportunities were effective in assessing our outcomes. There is however confusion from the adoption of the rubrics and having multiple entries for each rubric being displayed by the classes on the output portion of the reports from the various venues.

Outcome 1 as measured in the fall and spring sections of BIOL 110 gave a consistent picture that students are for the majority meeting or exceeding the assessment benchmark. However the number that did not meet the benchmark particularly in the day sections of the fall could be of concern, but could be differences between individual instructors and the initial norming of the performance indicators of the assessment rubric. The use of the MFT as a performance indicator provided data of the overall knowledge of our students as measured in Outcome 1. A review of individual students from the day program and their course plan while at Columbia College showed a strong performance correlation in the MFT sub-categories of cell, molecular, organismal, and population/ ecology/evolution.

Outcome 3 and Outcome 4 were consistent for in the results for student ability levels in regard to the course being assessed. Improvements in the spring data versus fall data collection could be attributed to improvements in the implementation of assessment by instructors and not necessarily the abilities of the students.

6. To improve student learning, what actions do you intend to take based on these data? Please explain.

- Improve communication with other venues
  - One issue with the spring data is that it is incomplete. Assessment was not always completed, and this most often occurred in venues other than the day campus. For example for the Outcome 1 Assessment rubric, 1 out of 2 Nationwide sections and 2 out of 5 online sections did not participate in assessment. In other words, almost 28% of assessment data for this course and Outcome was missing. For Outcome 4 in BIOL 110L, the Lake Campus did not participate in assessment. We have no way of knowing the reasons for this, but are interested in knowing whether part of the reason is a lack of clear understanding of the assessment process. If so, we can improve overall participation next year.

- Work on standardizing assessment via better rubrics
  - Where possible, we would like to provide clearer grading rubrics that can be used across courses. For example, we have a simple grading rubric for laboratory reports that could be suitable for BIOL 110L and BIOL 112L, and a separate one for BIOL 395 that could be implemented in both Day and Evening courses. Looking at the data for the assessment of Outcome 3 in BIOL 110L, we wondered why so many study in the Evening section received an ‘exceeds expectations’ in comparison to students in the Day sections. The may be a reflection of the fact that the rubrics are not applied in the same way.

- Changes to the ENVS curriculum, upcoming in 2016:
  - Based on trends in assessment and informal evaluation by the department, we proposed in the spring to make changes to the Environmental Science degree program. These changes included:
    a. Adding ENVS 115 and 115L to Core Requirements- this change will make performance in upper level courses such as Zoology, Ecology, and Research Design better
    b. For prerequisites, add the language “Grade of C or better” to each- this change will ensure that students moving on to upper level courses have mastered the material in the prerequisite courses (as it currently stands, a student can move on to a course having failed the prerequisite)
    c. For ENVS 223 and 251, Add ENVS 115 as an alternative prerequisite to GEOG 101: this change is meant to strengthen the link between introductory content and mid-level content related to Environmental Science
d. Add ENVS 222 as a prerequisite for ENVS 320 Ecology: this change is meant to provide an additional course in the sequence between the introductory course (BIOL 112) and one of the culminating courses in the ENVS program, ENVS 320.

- Changes to BIOL 112 and BIOL 112L
  o Based on MFT data from the last several years, including Fall 2014 assessment data, the department proposed changes to the content covered in BIOL 112, as well as strengthening BIOL 112L and making this lab more closely aligned with BIOL 110L.